

RAILWAY

TRACK and
STRUCTURES

This issue . . .

M&W Builds
Service RoadsSupply Rail
to the SouthernClinchfield
Washes TunnelsTraining Fire-
fighting PersonnelString More
Life From Ties

Contents—

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FORMERLY



THE NATIONAL LOCK WASHER COMPANY, NEWARK 5, N.J., U.S.A.



Safety with economy when you equip every track joint bolt with **RELIANCE HY-PRESSURE**

IT REQUIRES "work a plenty" at track level to insure safety of operation at all levels. You can have safety and economy too, by using Reliance Hy-Pressure Hy-Crome spring washers.

Hy-Pressure Hy-Crome spring washers are scientifically developed and manufactured by experienced personnel. They are produced in a modern plant employing the finest equipment. From the hot rolled steel to the carefully finished heat treated product, Reliance spring washers are carefully controlled under the most favorable conditions.

A word from you will bring a visit from one of our railway fastening engineers with some ideas that might be mutually profitable. Hy-Crome washers are made for track joints-frogs-switches-crossings, also for cars and motive power.

HY-CROME
spring washers



"Edgemark of Quality"



MANUFACTURING COMPANY, RELIANCE DIVISION

OFFICE AND PLANTS • MASSILLON, OHIO
SALES OFFICES: NEW YORK • CLEVELAND • DETROIT • CHICAGO • ST. LOUIS
SAN FRANCISCO • MONTREAL





and a Brute for Punishment!

Carry on run-through operations to your heart's content . . . with this rugged new switch stand on the job! The Bethlehem Model 99 Automatic Switch Stand was designed for just such brutal punishment; has stronger working parts, is 20 per cent heavier than any other automatic stand.

In a trailing movement of rolling stock, the first set of wheels moves the points toward the new position, and the throw is completed by a powerful spring mechanism working on the sliding-block principle. And the points *stay put*, just as surely as if the lever had been thrown . . . no springing back to original setting. The target changes with the points, but the operating lever remains unchanged until moved by hand.

The Model 99 is the right stand to install at all points on main or branch lines and in yards where run-through movements cause derailments, or damage switches. A Bethlehem representative will be glad to give you full details about this sturdy stand.

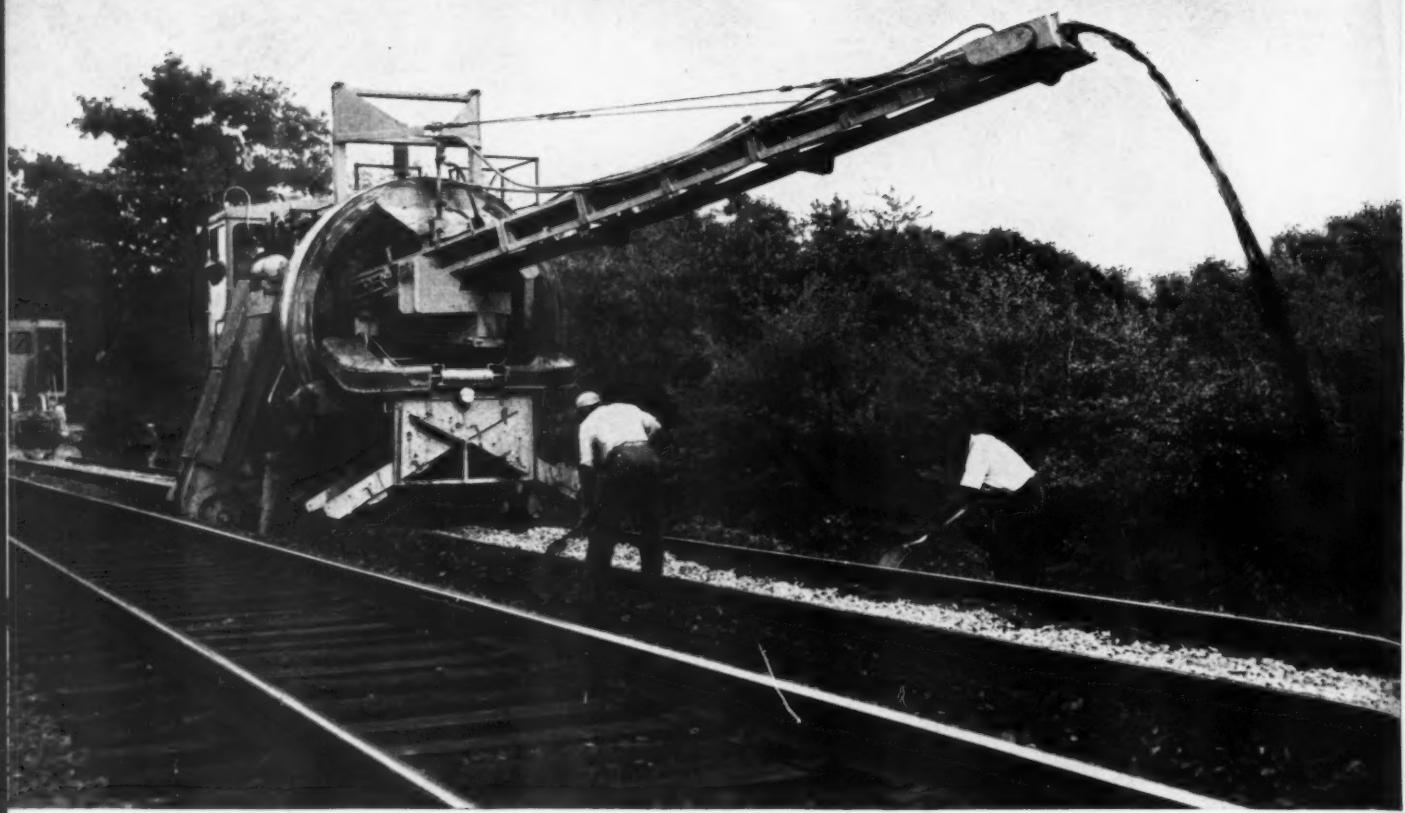


BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

New Bethlehem Automatic Switch Stand Model 99

Published monthly by Simmons-Boardman Publishing Corporation, 79 W. Monroe St., Chicago 3, Ill. Subscription price: United States and Possessions, and Canada, one year \$2.00 (special rate to railroad employees only, one year \$1.50). Single copies 50 cents. Entered as second-class matter January 20, 1933, at the post office at Chicago, Ill., under the act of March 3, 1879, with additional entry at Bristol, Conn. Volume 49, No. 12.



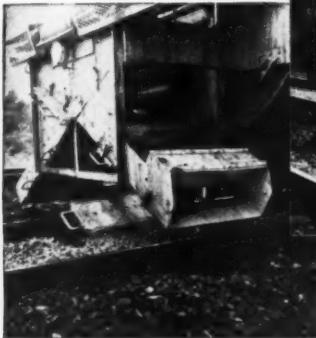
The new Pullman-Standard Power Ballast Cleaner and Winch Car team, the result of three years field research and engineering, for the first time enables railroads to clean both track shoulders once at a rate of 1000 to 1200 feet an hour with the labor complement of only four men. Both units have completely automatic controls located in their cabs. A triple-deck screen provides separate cleaning of large and small ballast, thus providing more thorough ballast cleaning and less loss of "fines." (Screen mesh sizes may be changed to meet specifications.) A rotary lift wheel carries dirt from the screen discharge to the dirt conveyor. The 140° arc of the dirt conveyor is controlled from the cab, allowing distribution of the dirt into either an adjacent or following car or track or on the berm of either shoulder, or beyond the drainage ditches.



Two of the revolving augers are inserting and bore into the ballast, break it up, and deliver the ballast to chain buckets which convey the ballast to a shaker screen for cleaning. The elevators on each auger are operated hydraulically and can be raised or lowered independently. They will cut to any desired depth 8 to 10 inches below tie base, depending upon the strength of the tie.



Self-aligning plows, one in back of each auger, follow the irregularly protruding tie ends to undercut and extrude the hardened seal which fringes the tie base, thus performing an operation essential to good track drainage. The depth of these plows can be adjusted manually to meet local conditions. The cleaned ballast falls into place just in back of these plows as the Cleaner moves forward.



Simple preset distributing mechanism automatically puts the clean ballast back on the track in any location and in the proportionate amounts desired, thus requiring only two laborers to follow in rear of the machine to finish distribution and clear ties. The Power Winch Car—its 30,000 lbs. of pulling force enables the Cleaner to push through the most cemented ballast.



last. It runs out ahead of the Cleaner, unwinding its cable and anchors itself in place with two, independent, self-aligning rail clamps, then winches in the cable. The clamps, designed not to slip on oily or peened rail, will function on rail of any gauge, type or condition of railhead without marking the rail. The 1000-foot, doubly looped $\frac{7}{8}$ " cable, with a breaking point of 60,000 lbs., is wound on a drum equipped with an automatic slip clutch that can be set from 0 to 30,000 lbs. so that it slips when obstacles are met. The cable can be unwound completely in 2 minutes and can be wound in at 600 to 5800 feet an hour.

ROAD & TRACK EQUIPMENT DIVISION

BIRMINGHAM • PITTSBURGH • NEW YORK • WASHINGTON • SAN FRANCISCO • 79 EAST ADAMS STREET

S U B S I D I A R Y O F
PULLMAN

Four men and new Power Cleaner

An operator for each machine and two laborers—this is all the manpower you need to clean ballast with the Power Ballast Cleaner and Winch Car team. But savings on labor are not all. You'll find that the work rate of 1000 to 1200 feet an hour will give even more savings because this versatile production team *cleans both shoulders simultaneously* to a depth of eight to ten inches below the tie base. Even in multiple track territory, the shoulder plus half the six foot are cleaned with just as few workers and at the same high production rate. On previously cribbed track, both crib and shoulder ballast of both shoulders are cleaned at 600 to 900 feet an hour, depending on how cemented the ballast is.

clean both track shoulders at once

Everything about this work team is designed to give you the highest production rate possible in the track time available. Set-up time takes only a few minutes once each work trick. Both units have powered, lateral set-offs and running speeds of 25 mph. in forward or reverse. Since each machine can run independently or tow the other, power failure in one will not tie up your track or delay traffic.

The Power Winch Car, developing up to 30,000 pounds of tractive force, assures effective operation even in the most cemented ballast, such as is found at grade crossings, and its exclusive rail clamping device, regardless of rail conditions, gives positive anchorage (without marking rail) with a full load on the cable.

at 1000 to 1200 feet an hour

You can prove to yourself on your own track just how this Power Ballast Cleaner team cuts labor costs, makes maximum use of track time without the use of "dead" track or work train, and gives you high quality production at low cost, by choosing one of these four ways:
(1) rental for six months with option to buy and all rental payments applied to purchase price;
(2) straight rental for six months; (3) deferred quarterly payments over a period of one to three years; (4) outright purchase.

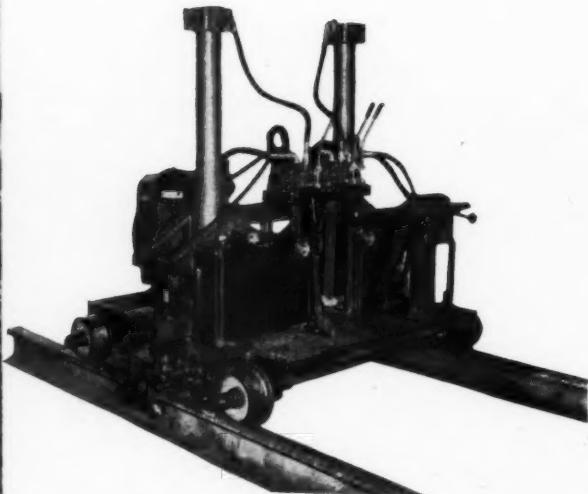
When in Chicago, you are cordially invited to visit our Michigan Avenue Industrial Showrooms.

PULLMAN INCORPORATED

- STANDARD

CAR MANUFACTURING COMPANY

CHICAGO 3, ILL. • THE HOLDEN CO., LTD., MONCTON • MONTREAL • TORONTO • WINNIPEG • VANCOUVER



A KERSHAW JACK FOR EVERY PURPOSE



You wouldn't try to stir your iced tea with a soup spoon, would you?

Or try to eat dessert with an iced tea spoon?

You could do it, of course. But it would be awkward and inconvenient.

That's just the way it is with jacks for use in raising railroad tracks. Kershaw Manufacturing Co. has one for every purpose and there's absolutely no need to grapple with a jack that isn't designed to do your job.

The jack pictured on the left above is the Kershaw Jackall which is self-propelled by a hydraulic motor.

It has no gears to maintain, comes equipped with a new, improved eye level spotboard and set-off. The Jackall can be operated by one man, weighs 4,000 pounds, is a 12-horsepower, two-cylinder operation, and its gas motor drives two hydraulic pumps.

What's more, the Kershaw Jackall tamps the adjacent ties as the track is raised.

It can reduce your surfacing gang to only ten men for

a production of 500 feet per hour.

It will cut your track jacking crew from 12 to four men.

Then, too, there's the Kershaw Hydraulic Jack, pictured at right above. It's a hydraulic-powered, one-man operation.

It's the only jack on the market which is self-propelled and provided with automatic rail dogs operated by one man.

The Kershaw Hydraulic Jack is manufactured as a separate unit as well as being included in the Jackall.

In addition to the Kershaw Jackall and Kershaw Hydraulic Jack, Kershaw Manufacturing Co. also constructs such top-flight equipment as the Ballast Regulator and Plow, Kershaw Kribber, Utility Derrick, Mocar Crane, Track Broom and others.



TRACK-TALK—Published every other month by Kershaw Manufacturing Co. Write for your free copy today.

KERSHAW MANUFACTURING CO., INC., P. O. BOX 510, MONTGOMERY, ALA.

TRACKWORK EQUIPMENT DESIGNED, DEVELOPED AND PROVEN ON THE JOB



Now
this
B&O crane
has big,
yellow
muscles

A long life, and a productive one, was given this Browning 22-ton Railroad Crane when a Caterpillar D318 Railroad Diesel replaced the original steam power.

The economy of Caterpillar power becomes evident the minute you put it to use. For instance, the B&O crane, unloading cinders along new track, uses only 10 to 15 gallons of inexpensive No. 2 furnace oil each 8-hour work day.

By repowering with Caterpillar Railroad Diesels, railroads find they no longer have water problems or lost time with dirty boilers. And in cases of emergency, there are no long waits to get up steam.

Easy to install and operate, these powerful, rugged Diesels require only a few simple adjustments. And most important, you do not have to tie up railroad funds in a large inventory of parts. You are never far from a

Caterpillar Dealer or parts depot. You can get parts in a matter of hours.

Leading manufacturers of railroad cranes, locomotives and other on-track equipment can supply you with Cat* Railroad Diesels. Specify them in the next equipment you buy. And for replacement power, your Caterpillar Dealer has the right engine for you—one of 12 sizes up to 500 HP.

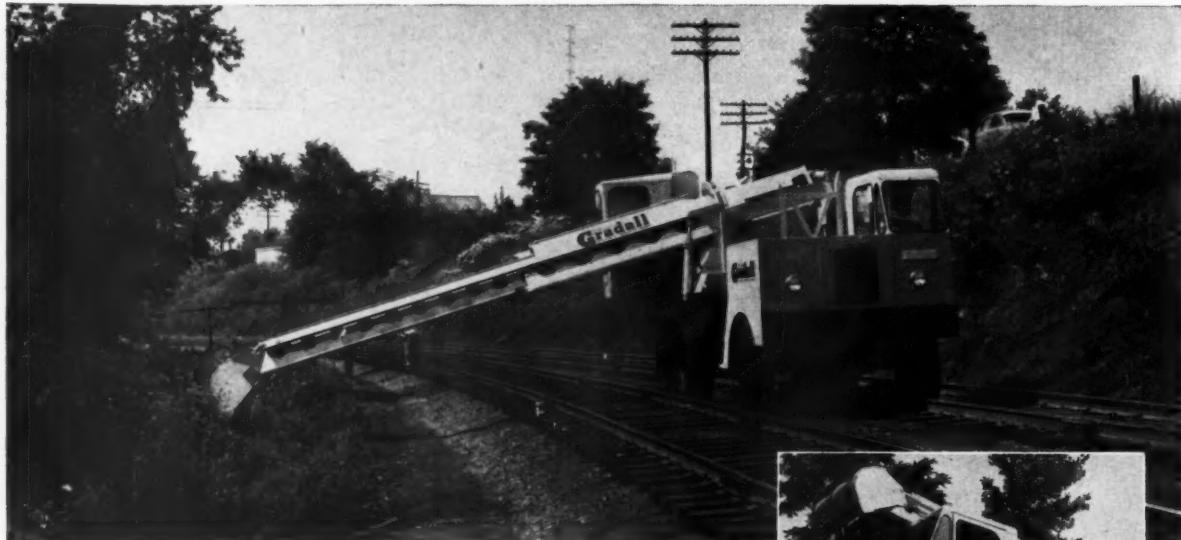
Caterpillar, Peoria, Illinois.

CATERPILLAR®

*Both Cat and Caterpillar are registered trademarks—®

SPECIFY CAT POWER
FOR HIGH-PROFIT
PERFORMANCE

NOW—maintenance of way for EVERY MILE OF TRACK with New Railroad Gradall!



Specially designed for railroads—for work right on the track as well as off-track maintenance—this new railroad Gradall extends the many money-saving and operational advantages already proved by Gradalls on leading railroads.

With its oversized track-climbing tires and power steering this new Gradall can work along your entire right-of-way. It easily moves over track at any angle, over rough terrain usually accessible only by track, and can work straddling the track—even in narrow cuts or tunnels. It doesn't require a work train, and never ties up traffic because it clears the track instantly when on the job, and can travel by highway from one division point to another. Its speed and mobility make it an excellent emergency maintenance unit.

You'll keep a Gradall busy the year round, because it handles so many different maintenance and construction jobs. It carries its own quickly interchangeable attachments for any work. And with a new boom extension*, you can "stretch" the Gradall's normal 24-foot telescoping reach to a full 36 feet, increasing the working range of its powerful, speedy **arm-action**. Remote control* of the undercarriage from the operator's cab simplifies spotting the machine on the job and affords one-man operation, if desired.

But let your Gradall Distributor prove to you how the multi-purpose Gradall can save you money on your maintenance-of-way work. Contact us for a field demonstration on your own jobs. Warner & Swasey Company, Cleveland 3, Ohio.

*Optional equipment

**Gradall Distributors in over 75 principal cities
in the United States and Canada**

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY



On or off the tracks in a hurry! Oversize tires and power steering enable Gradall to cross tracks and rough terrain as if they were not there.

Gradall
DIVISION OF

WARNER
&
SWASEY
Cleveland
PRECISION
MACHINERY
CO. INC.

No More Trenching!
No More Jacking up Track!

This WOOLERY

Tie-removing Team Now Eliminates
This Slow, Costly Method!

Manufacturers of Tie Cutters, Tie End Removers, Tie End Trimmers, Power Bolt Tighteners, Spike Drivers, Motor Cars, Push Cars, Tool Transporters, Weed Burners, Extinguisher Cars, Chemical Sprayers, Tie Plate Spacers, Creosote Tie Sprayers, Rail Nippers, Flangeway Cleaners, Rail Joint Oilers, Power Joint Lubricators.

Use the WOOLERY TIE-END REMOVER in conjunction with the improved model NU WOOLERY TIE CUTTER! It's the *perfect team* for greater savings on tie renewals—and gives *smoother, safer track, too!*



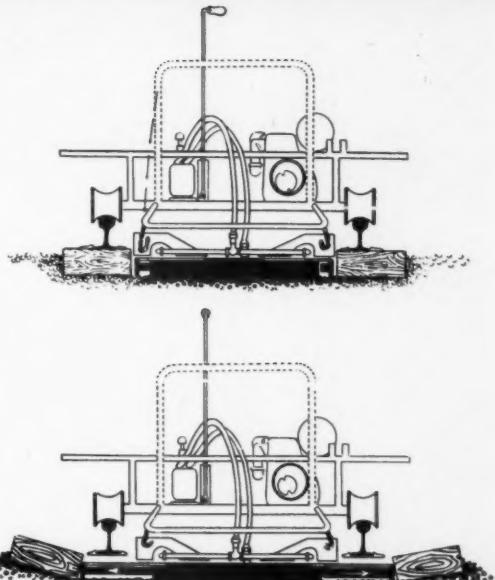
After the tie has been cut on both sides by the WOOLERY Tie Cutter, the operator of the Tie-end Remover—(who follows closely behind so that operators can assist each other in removing machines from track)—lifts the center section out with tie tongs.

2 A double-ended hydraulic cylinder is then lowered into the tie bed.

3 A simple turn of the valve moves these two pistons outward, pushing the tie-ends completely clear of the rail—whether working with single or double shoulder tie plates! The crib is now open—and only the necessary amount of ballast is removed to admit the new tie.

The trend toward heavier rail and double shoulder tie plates has made removing tie-ends increasingly difficult. With the WOOLERY Tie-end Remover, this task can now be done in less than a minute by one man with no more effort than that required to turn a valve! See how simply and efficiently this WOOLERY team works—follow the "1-2-3" steps of tie-removal.

There has been no trenching or jacking up of track—thus line and surface of track are maintained, soft spots and humpy tracks are eliminated—the new tie rests on a firm bed and little or no tamping is necessary!



SINCE 1917 RAILWAY MAINTENANCE EQUIPMENT
Woolery
MACHINE COMPANY
 2919 COMO AVE. S.E. MINNEAPOLIS 14, MINN.
 Exclusive Export Representatives
 PRESSED STEEL CAR CO., NEW YORK, N.Y.

SPECIFICATIONS

- ENGINE Wisconsin air-cooled 4-6 H.P.
- PUMP 1,500 P.S.I. built-in relief valve, 1 gal. reservoir.
- DRIVE Double V-belt.
- CYLINDER 3" bore, honed bush, double-ended, double acting, hardened, ground and chrome plated rams equipped with fast writers.
- TRACK ROLLERS 6" self-centering, insulated.
- NET WEIGHT 360 pounds.
- CRATED WEIGHT 490 pounds.



One of the 160 Uses of CONCRETE on Railroads

NO. 16 OF A SERIES

Precast reinforced concrete piles are preferred for trestles, bridges and piers by many American railroads because they offer low cost per ton of load and give long service under severe conditions. They defy fire, marine borers, termites and decay.

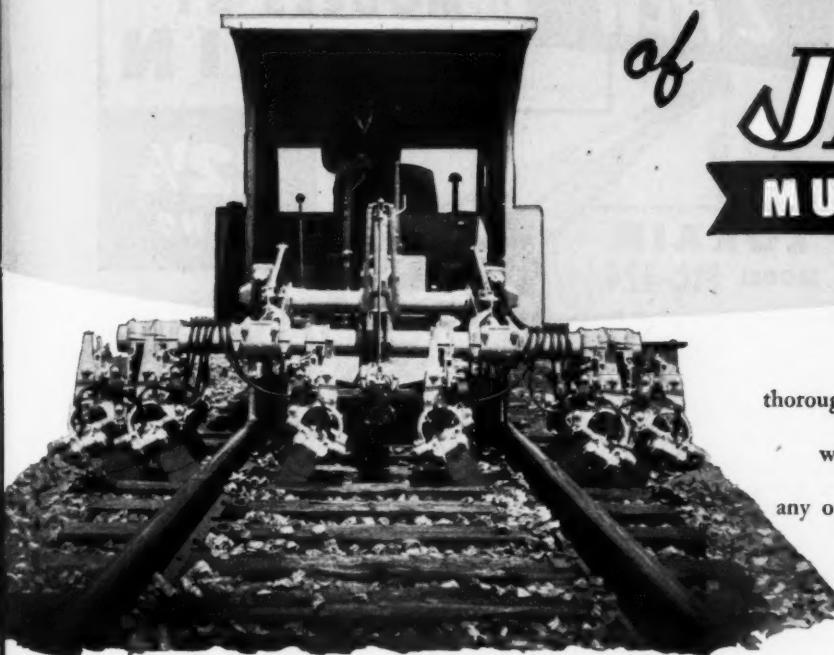
Concrete piles are just one of the more than 160 uses of concrete which enable railroads to improve service and save time and money. The moderate first cost, long life and low maintenance cost of such improvements result in *low-annual-cost* service. This saves money for other necessary budget items.

PORLAND CEMENT ASSOCIATION
33 West Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

THE FACTS WILL SOUNDLY BACK Your 1954 Budget Recommendation

of JACKSON MULTIPLE TAMPERS



On leading railroads throughout America it has been thoroughly established that the JACKSON MULTIPLE TAMPER will put up perfect track at less cost than can be achieved by any other means. Wide range usefulness is the secret of high annual production with real economy, in low to high track lift operations, in all ballasts. And, low-cost machine maintenance merits consideration, too.

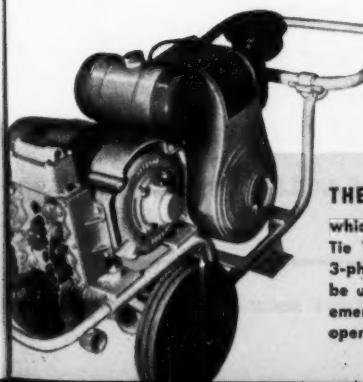
Write, wire or phone for any information desired.

JACKSON 2 to 4-

TAMPER OUTFITS

For many years the choice of the vast majority of the nation's railroads. Ideal for low-lift and smoothing work with small gangs using 2 to 4 tampers. Also excellent for major ballasting or out-of-face operations since several may be grouped for this purpose. For maximum maintenance economy and top quality track include both the MULTIPLE and JACKSON HANDTAMPERS in your 1954 budget recommendations.

Their unique, vibratory action and quickly interchangeable blades make them peak performers under all conditions.



THE MODEL M-22 POWER PLANT

which operates 2 to 4 Jackson Vibratory Tie Tampers supplies both single-phase and 3-phase 120 V. 60 Cy. AC, and may be used for emergency signaling, emergency CTC operations, lighting and operating various power tools.

ELECTRIC TAMPER
& EQUIPMENT CO.
LUDINGTON, MICHIGAN

CANADIAN REPRESENTATIVES:

How "Cranes - on - Rubber" Got Their Start

Back in 1918, General Pershing asked for 125 mobile cranes on truck chassis to work on the docks in France to speed up the handling of war material. But, World War I ended before such cranes were available. However, F. A. Smythe, then President of The Thew Shovel Co. in Lorain, Ohio, developed the idea and, late in 1918, the Universal Crane Co., a subsidiary of Thew, marketed the first so-called "Truck Crane".



The first truck crane — 1918 model

In the years that followed, much happened to "truck cranes". They became accepted tools of the construction industry, capacities increased, booms became longer, and finally exceeded the capabilities of the commercial truck chassis as mountings. These were replaced with heavy-duty carrier especially designed for the live, highly-concentrated loads of shovel-crane use. The first such carrier, on which was mounted a Lorain turntable, was the Lorain Moto-Crane, developed and produced by Thew in 1940. Thew Shovel Co. still designs and builds Moto-Cranes in their own plants.

The first Universal Truck Crane had a lifting capacity of 3 tons with a maximum boom of 20 ft. Today, Moto-Cranes are made in a variety of capacities from 6 to 45 tons, with highway speeds up to 33 m.p.h. Rear axles mounted on rocker beams, air steer, large dual wheels, ample tractive effort and the availability of front end drive make them exceptionally efficient for off-the-road travel over soft and rough ground.



World's largest crane on rubber today

While the trade-marked name for the Lorain 2-engine rubber-tire machine is "Moto-Crane", it has been many years since their use has been limited to lifting crane service only. Front ends are also available for shovel, dragline, clamshell, hoe and scoop shovel use as well.

2 NEW

**MOTO-CRANE®
MODELS BY
LORAIN**

**22½
TONS**

LORAIN MODEL MC-424

2 gasoline engines (1 on turntable, 1 on carrier); available as shovel, crane, dragline, clamshell and hoe; 96" over-all width; 10 forward speeds (up to 27 m.p.h.), 2 reverse speeds; air brakes; maximum boom with tip - 125 ft. May be had with diesel power for turntable, third drum, power load lowering, front wheel brakes and many other accessories.



Also available as a companion single-engine Self-Propelled machine — Model SP-424

LORAIN-TL MODEL MC-254W

Available as 3/4-yd. shovel, crane, dragline, clamshell, hoe or 1 1/4 cu. yd. scoop shovel. 106" over-all width; 8 forward speeds (up to 37 m.p.h.), 2 reverse speeds; air brakes; maximum boom length with tip is 95 ft. May be had with diesel power for turntable and carrier, with front driving axle, third drum and other accessories.



Also available as a companion single-engine Self-Propelled machine — Model SP-254W

Now you can have even greater selection from the Lorain line of products with the addition of these 4 new Moto-Crane and Self-Propelled models. Thew-Lorain is now better prepared than ever to serve all your shovel-crane needs — whether on rubber tires or crawlers. See your Lorain distributor for the full Lorain story.

**THE W
LORAIN®**

THE THEW SHOVEL CO., LORAIN, OHIO

**THE W
LORAIN®**

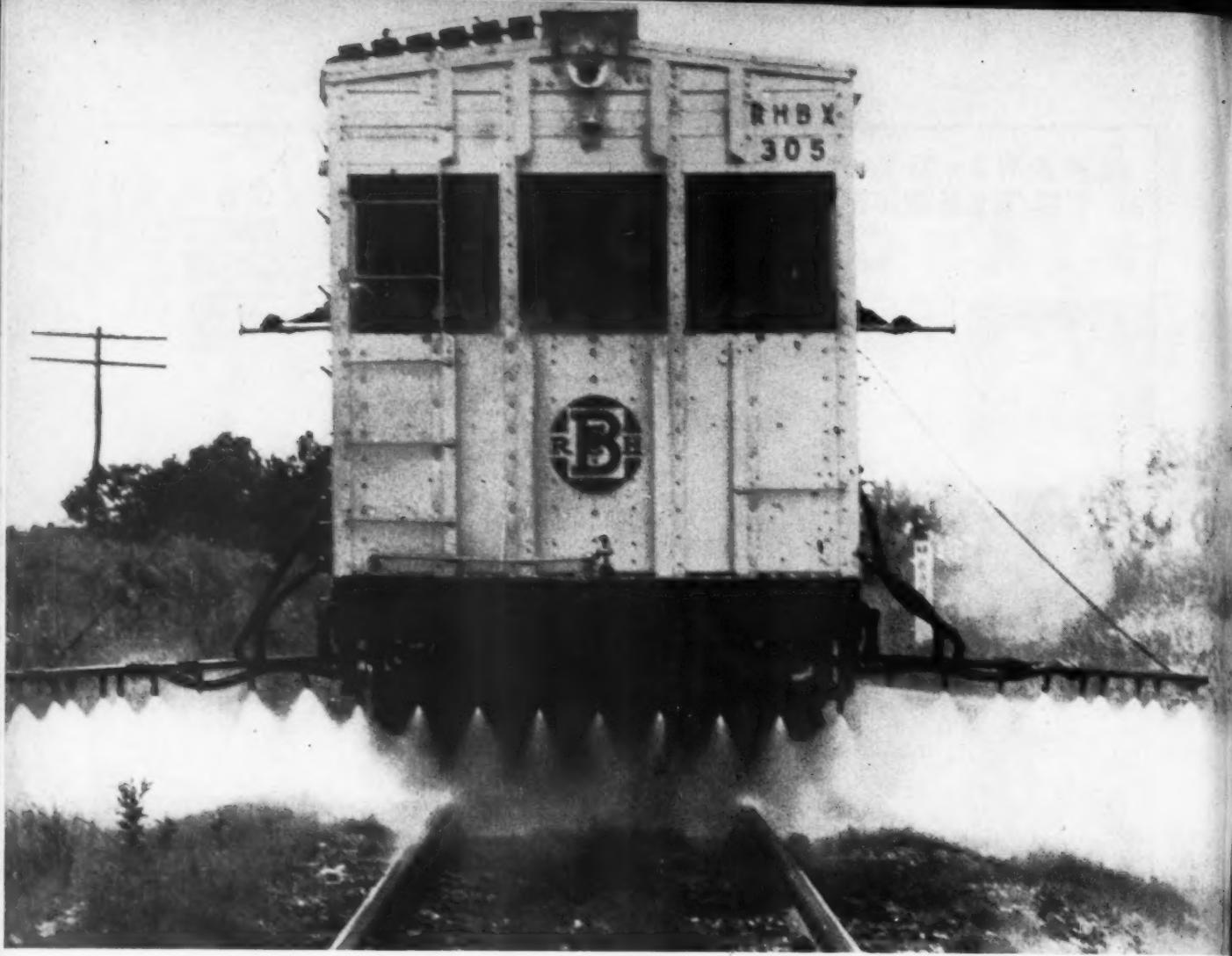
SHOVELS • CRANES • CLAMSHELLS • DRAGLINES • HOES

"SILENT NIGHT . . . HOLY NIGHT"



The Wonder That is
CHRISTMAS
is Always With Us

THE RAIL JOINT COMPANY, INC.



THE BOGLE WAY IS THE

It is a truism that there is no substitute for experience. And, in getting rid of weeds and roadway growth—it applies with particular force. The Bogle way follows a blazed trail of consistent "on track" tests which determine the most economical and effective treatment for the job at hand.

Research-proved herbicides are applied with the most modern spraying equipment manned with skilled operators. *The Bogle way* results in the lowest possible cost per mile.

Tested Way

The R. H. BOGLE Company

ALEXANDRIA, VA.

Memphis, Tenn.

COMPLETE WFFD and BRUSH KILLING SERVICE



New model rides on TIMKEN® bearings like forebear 28 years ago

EXPERIENCE counts heavily with Fairbanks-Morse officials. As a result, their new 53DV rail car rides on Timken® bearings just like their older models as far back as 1925. Here's why:

Timken bearings, mounted on the axles, easily handle the continuous radial load the wheels encounter on the straight-away in addition to sudden thrust loads imposed on every curve. That's because

tapered construction of Timken bearings enables them to take radial and thrust loads in any combination.

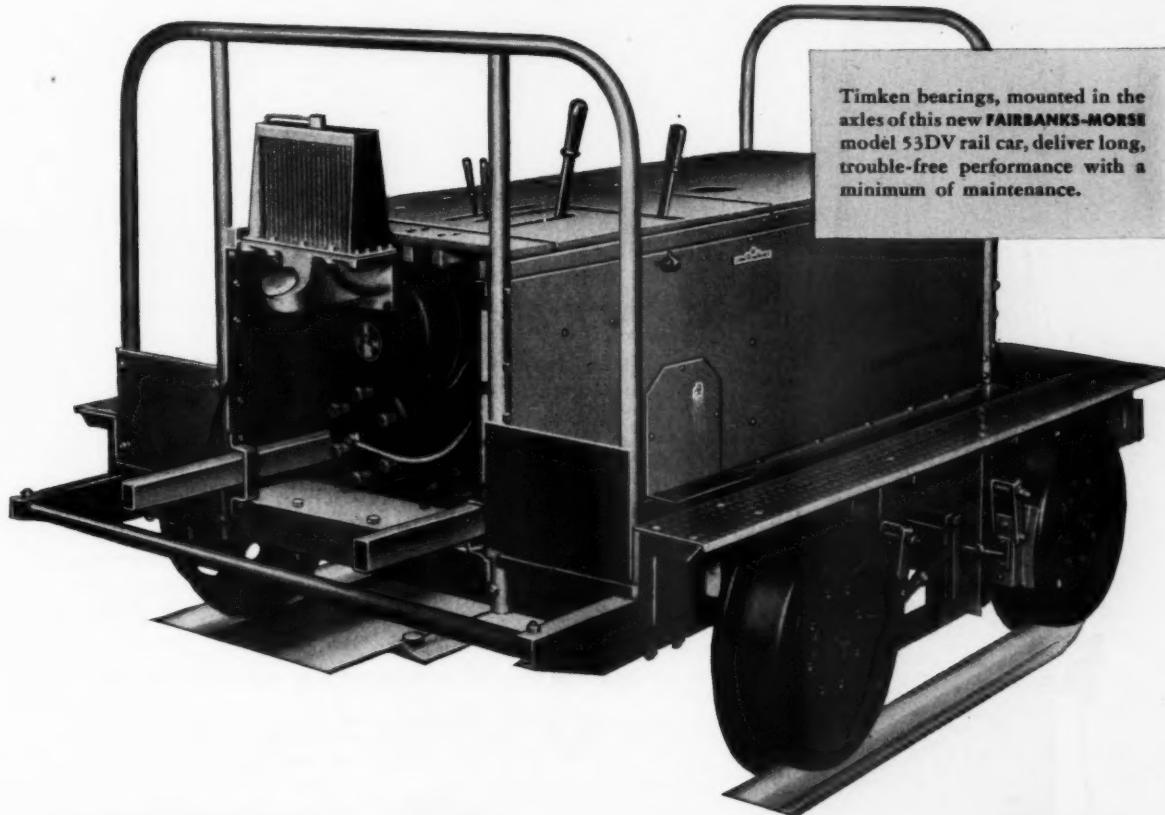
Important, too, Timken bearings absorb the sudden shock loads the axles meet when the car is put on or lifted off the rails. Rollers and races of Timken bearings are case-hardened to give them tough, shock-resistant cores and hard, wear-resistant surfaces. True rolling motion and incredibly smooth surface

finish of Timken bearings practically eliminate friction. Wheels start quickly, easily and turn smoothly.

For year-after-year trouble-free performance on the equipment you build or buy, always specify Timken bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.



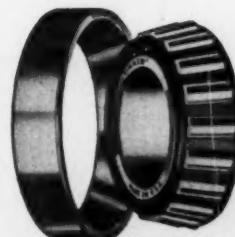
Timken bearings, mounted in the axles of this new FAIRBANKS-MORSE model 53DV rail car, deliver long, trouble-free performance with a minimum of maintenance.

MAGNIFYING GLASS INSPECTION OF EVERY ROLLER!

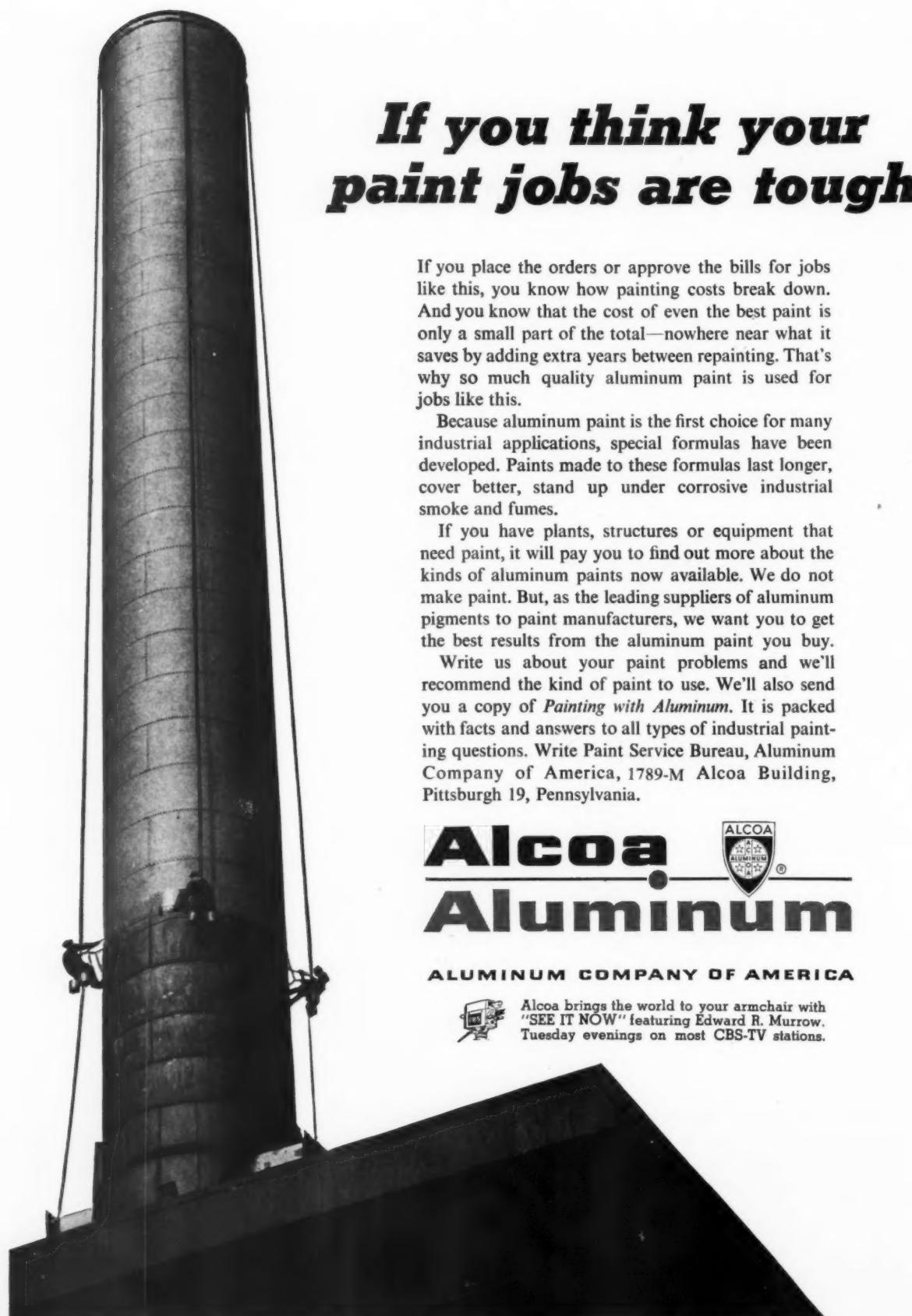


Every one of the over one billion Timken bearing rollers produced every year is inspected with powerful magnifying glasses to detect surface flaws. It's just one example of how the Timken Company insures uniform high quality.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS



NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION



If you think your paint jobs are tough

If you place the orders or approve the bills for jobs like this, you know how painting costs break down. And you know that the cost of even the best paint is only a small part of the total—nowhere near what it saves by adding extra years between repainting. That's why so much quality aluminum paint is used for jobs like this.

Because aluminum paint is the first choice for many industrial applications, special formulas have been developed. Paints made to these formulas last longer, cover better, stand up under corrosive industrial smoke and fumes.

If you have plants, structures or equipment that need paint, it will pay you to find out more about the kinds of aluminum paints now available. We do not make paint. But, as the leading suppliers of aluminum pigments to paint manufacturers, we want you to get the best results from the aluminum paint you buy.

Write us about your paint problems and we'll recommend the kind of paint to use. We'll also send you a copy of *Painting with Aluminum*. It is packed with facts and answers to all types of industrial painting questions. Write Paint Service Bureau, Aluminum Company of America, 1789-M Alcoa Building, Pittsburgh 19, Pennsylvania.

Alcoa
Aluminum

ALUMINUM COMPANY OF AMERICA



Alcoa brings the world to your armchair with
"SEE IT NOW" featuring Edward R. Murrow.
Tuesday evenings on most CBS-TV stations.



HEAVY-DUTY LOADER

For International TD6W and TD9W Tractors

• Now you have real versatility in a heavy-duty loader. ATECO whirls around in a tight circle to dig, strip, backfill or excavate. Then it stretches high into the air to load trucks and gondolas.

ATECO equipment is designed by Mack Wooldridge, long a specialist in earth-moving products for many-purpose use. The same mounting brackets and hydraulic controls are adaptable for other ATECO

attachments which allow you to double up on operations.

ATECO products are built by the Greenville Steel Car Company, who has had 40 years' experience in manufacturing heavy equipment. The ATECO diamond trademark stands for outstanding design, quality in material and accurate workmanship.

Write, wire or phone for Bulletin No. 351—quick information.

ATECO EARTH-MOVING EQUIPMENT

east of the Mississippi

GREENVILLE STEEL CAR CO.

Greenville, Pennsylvania • Phone: Greenville 1850

west of the Mississippi

AMERICAN TRACTOR EQUIPMENT CORP.

9131 San Leandro Blvd. • Oakland 3, California



WITH ATTACHMENTS
AND one TRACTOR YOU'LL
DO MORE JOBS



SCARIFIER

With Scarifier attached—operator is able to do earth ripping between trips



ROADBUILDER

Attach a Roadbuilder or Bulldozer and you are ready to scrape and grade.

ALSO BACKFILLING BLADE, LIFT FORK AND OTHER FRONT AND REAR ATTACHMENTS

What are the Ingredients of Good Railroad Service?

RAILROAD MANAGEMENT

These are the men who must maintain an intelligent policy control; they must have a constant awareness of the nation's pulse and of all facts available to help them *improve service, cut costs and increase profits*; these men must *discriminate, decide, then act.*

RAILROAD ENGINEERING

The Chief Engineer and Mechanical Department officers and employes must *supply information* to management — as well as *apply new principles to practical use*; these men must have *vision* as well as knowledge to see through faulty engineering design — and to recognize value in new principles in order to *recommend to management.*

RAILROAD SUPPLIERS

This is a group of industries *within an industry*; firms who exist to serve the railroads. They are constantly improving products and seeking ways to cut costs.

Matisa is a railroad supplier with capital invested in the future of the railroads — continually investing more on research. *Matisa* track equipment makes roadbeds smoother, speeds maintenance, cuts costs . . . *Matisa* is known as the firm which has set up a "new standard of track maintenance."

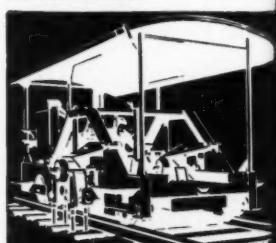
Matisa's Sales Progress Report proves that more and more railroad presidents are looking to their chief engineers for track maintenance equipment to ensure operating economy as well as quality. If you would like a copy of this report, write us.

Matisa
EQUIPMENT CORPORATION

224 SOUTH MICHIGAN BLVD. • CHICAGO 4, ILLINOIS

TRACKWORK SPECIALISTS ALL OVER THE WORLD

This message appeared in the Wall Street Journal



NEWS NOTES...

...a résumé of current events throughout the railroad world

DECEMBER, 1953

A new tidewater record for fast discharge of import ore was recently established at the Curtis Bay ore pier of the Baltimore & Ohio at Baltimore, Md. The new record, believed to be the fastest unloading time for any ocean port, was set as a full cargo of 20,560 tons of Liberian ore was unloaded in 13 hours and 55 minutes.

The Great Northern has announced that road-train radio will be installed on its main line from Minneapolis to Havre, Mont., a distance of 924 miles. The road is also placing its Hillyard, Wash., yard under radio control, even to walkie-talkie sets for yard clerks and checkers.

A wage increase of \$8 per month, retroactive to December 1, 1952, was agreed upon November 5 at Chicago by the railroad's regional conference committees and the American Train Dispatchers Association, representing about 3,200 employees. Agreement was also reached to go ahead with collective bargaining on the dispatchers' demands for extended vacations and sick leave and the carriers' request for certain rule changes.

New freight cars for domestic use delivered in October totaled 8,727, the largest number delivered in any 1953 month so far, according to a joint announcement by the American Railway Car Institute and the Association of American Railroads. October 1952 deliveries totaled 5,437.

The Brotherhood of Railroad Trainmen recently asked Administrator James K. Knudson of the Defense Transport Administration to investigate the movement of truck-trailers-on-flat-cars "for the ultimate purpose of declaring a public policy supporting it as vital to the national defense."

The ICC will recommend, in its annual report to Congress, that its car-service powers be extended to include express companies. This recommendation will be based on the newly signed express contract whereby the Railway Express Agency is obligated to furnish its shippers with reefer and other special-type cars.

The Santa Fe has recently installed, in the western Arizona desert, a flood detector arrangement whereby advance warnings of flash floods are automatically relayed to the dispatcher's office via radio. A float-actuated transmitter sends a special signal 6½ miles to a receiving station at Griffith, Ariz., where the signal is automatically put on the dispatcher's telephone line.

A definite lack of enthusiasm toward "piggy-back" transportation of truck trailers on railroad flat cars was recently demonstrated by delegates to the American Trucking Association's Los Angeles convention.

NEWS NOTES (continued)

Effective November 20, air freight minimum rates went up 25 per cent in accord with a C. A. B. ruling. The rate boost, however, actually amounted to approximately 12 per cent, since rates in effect at the time were generally in excess of the then existing minimum.

Railroads will hereafter get from the Post Office Department only a last-chance, take-it-or-leave-it opportunity to haul competitive mail traffic according to the latest instructions issued by the department to its district superintendents of transportation service.

Trailer-truck drivers must submit this fall and winter to rigid physical and technical tests in the state of New Jersey in order to obtain the special license needed in that state after the first of April. A.F.ofL. teamsters union drivers are threatening a strike if the regulations are enforced.

Dr. Julius H. Parmelee has retired as vice-president of the Association of American Railroads and director of its Bureau of Railway Economics to be succeeded by J. Elmer Monroe, assistant vice-president of the association and assistant director of the bureau. Statistician Graham E. Getty succeeded Mr. Monroe. Dr. Parmelee will be retained by the association as consulting economist.

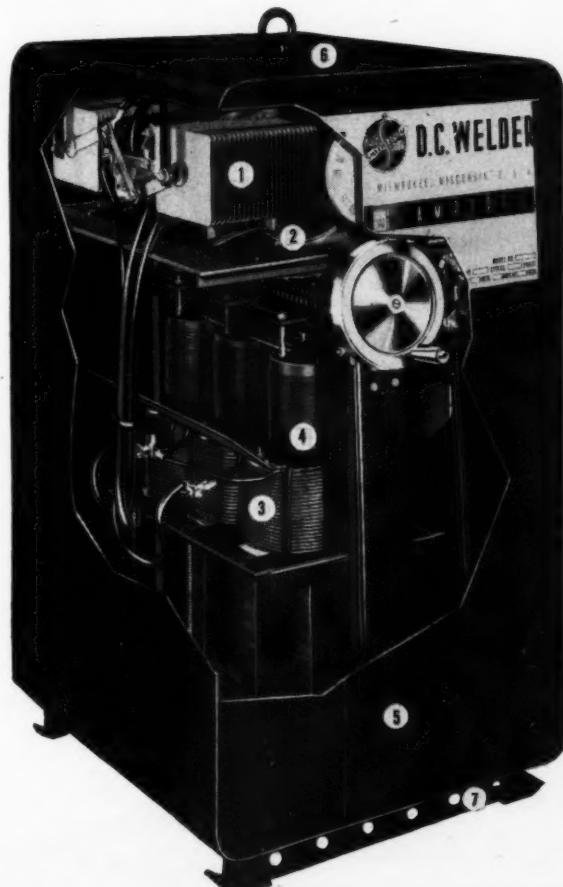
The October 1 parcel post rate boost will remain in effect in the light of recent developments in Washington, D. C., where a district court judge dismissed the case in which the opponents of the increase were seeking an injunction.

The directors of the Great Northern have approved a 1954 expenditure of \$14,756,000 for track and bridge improvement. The program includes the purchase and installation of 37,000 tons of 115-lb. rail.

The railroads' "share" of total intercity freight traffic, as measured by ton-miles, was 54.9 per cent in 1952 as compared with 55.9 per cent in 1951, according to a recent statement released by the Bureau of Transport Economics of the Interstate Commerce Commission. Meanwhile, the truckers' share was up slightly—from 15.6 per cent in 1951 to 16.2 per cent last year.

ALSO WORTH NOTING—Full dieselization of all Baltimore & Ohio freight and passenger service east of Cumberland, Md., became effective on November 3 . . . Radio-telephone service is now available on the New York Central's "Twentieth Century Limiteds" throughout their daily runs between New York and Chicago and return . . . The Canadian National plans to begin construction of a large, \$20-million hotel at Montreal next year. Completion of the hotel will be followed by the construction of a \$14-million office building in the same area . . . The ICC has modified its AB-brake order adding exemption provisions designed to take care of special situations.

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and DOW SODIUM TCA 90% control brush, weeds and grass



Photo courtesy of National Aluminate Corporation

Efficient vegetation control on the roadbed and along thousands of miles of right-of-way is accomplished by Dow's hard-hitting brush, weed and grass killers. Esteron® Brush Killer controls common species such as alder, ash, birch, brambles, cherry, elm, maple, hickory, oaks, osage orange, poison ivy, sumac, willow and other hard-to-kill brush and trees. It contains the highly effective, low-volatility propylene glycol butyl ether esters of 2,4-D and 2,4,5-T. In certain areas with solid stands of brush resistant to 2,4-D—use Esteron® 245 containing these esters of 2,4,5-T only. For hard-

to-control weeds, use Esteron® Ten-Ten, new Dow low-volatility 2,4-D ester weed killer. For control of annual and perennial grasses, use Dow Sodium TCA 90%, alone or in combination with Dow weed and brush killers.

Railway maintenance men and spray service companies are invited to look to Dow for a complete line of vegetation control chemicals. Valuable technical information and assistance are yours on request. THE DOW CHEMICAL COMPANY, Agricultural Chemical Department, Midland, Michigan. In Canada: Dow Chemical of Canada, Limited, Toronto, Canada.

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... where loads are the heaviest . . . crews the largest . . . that's where you'll find Fairbanks-Morse Motor Cars turning in records of performance, economy and safety.

Take the Model 53 for example. The capacity of this standard section car accommodates full crew and equipment for all track maintenance jobs, yet is light enough for a minimum crew to set-off and handle.

Hauling trailers of ties and track equipment is a heavy job. The Model 53, with its famous F-M air-cooled clutch, can start and pull these heavy loads without damage. Continued slipping in this clutch cannot cause overheating or damage. With either Chain Drive or V-Belt Drive, clutch wear is negligible.

Add the F-M performance-proved features of sturdy steel frame—four-wheel self-centering brakes—rugged, powerful two-cycle engine—grouped controls and full visibility—and you'll see why F-M motor cars set the standard of performance where the jobs are the toughest. Fairbanks, Morse & Co., Chicago 5, Illinois.



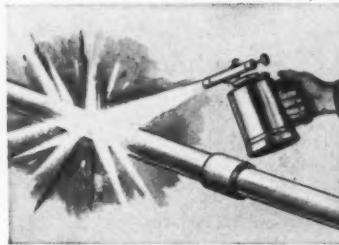
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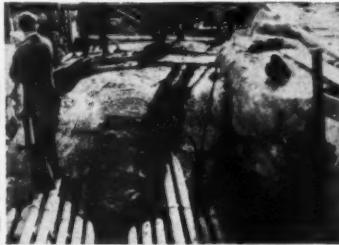
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In Subways, where passenger safety is paramount, fireproof Transite Ducts will, in the event of a burn-out, confine it and reduce the hazard of panic.



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Photograph courtesy of Triborough Bridge and Tunnel. In Railroad Tunnels, if a burn-out should occur, Transite Ducts limit damage, permit speedier repair and an earlier re-opening for traffic.

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That's why TRANSITE® DUCTS confine burn-outs and protect adjacent cables

DESPITE modern precautions, the burn-out is still a potential hazard. Consequently, cables should be given the maximum fireproof protection that Transite Ducts provide.

Transite Ducts confine burn-outs, safeguard adjacent cables from damage and reduce the possibilities of panic and explosion because they are incombustible throughout. Made of nonflammable asbestos and cement, Transite Ducts will not burn, smoulder or generate smoke or fumes. They cannot contribute to the formation of explosive gases.

Nowhere is the fireproof protection of Transite Ducts so necessary as in such vital locations as subways, tunnels and power plants.

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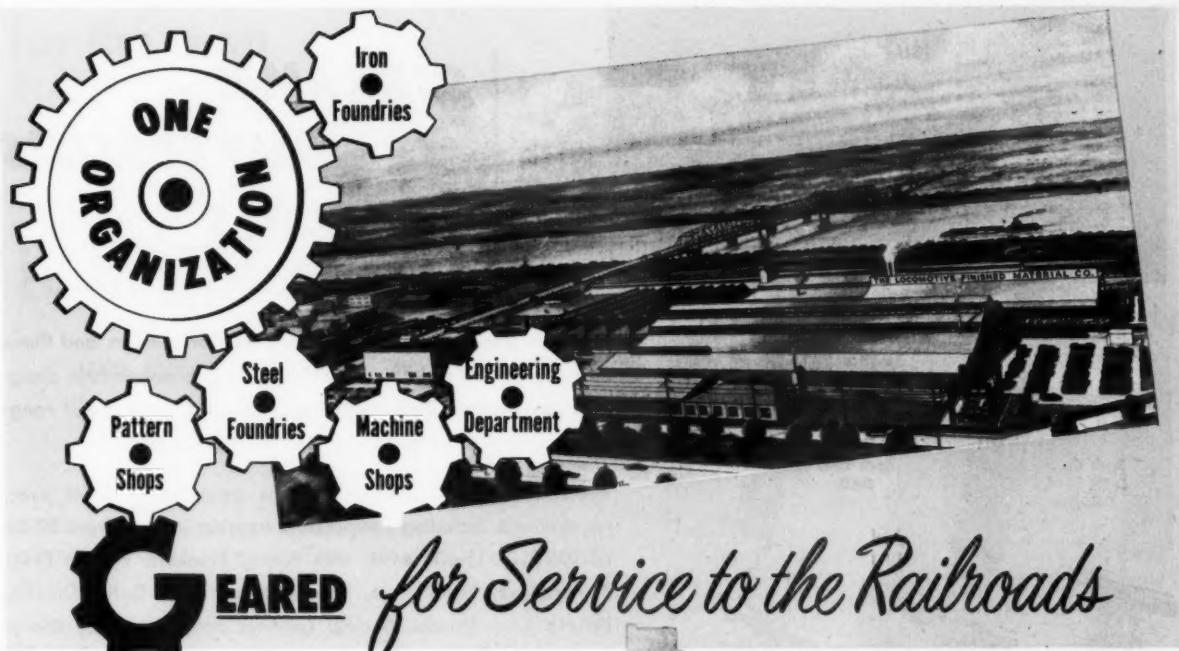
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TRANSITE KORDUCT—for installation in concrete

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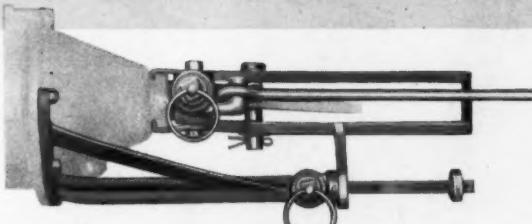


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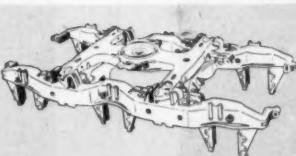


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7 "Reclamation of Diesel Engine Parts by HELIARC Welding"—repairs of many types of diesel parts—aluminum, stainless, cast iron—are given in this 10-page reprint.

8 "A New Method of Electric Welding Speeds Coupler Reclamation"—a large Midwestern road has adopted UNIONMELT welding to reclaim worn couplers more efficiently.

9 "New Railway Car-Building and Repair Shop Methods"—latest wrinkles in car-building by UNIONMELT welding and also valuable information on HELIARC and sigma welding.

10 "Welding at the Railroad Reclamation Plant"—how a Midwestern railroad that reclaims 175 different parts uses the oxy-acetylene process to make worn parts usable.



East Bengal Railway

teams rail and off-track speeds rail and port

On construction of new facilities at the Port of Chittagong, East Pakistan, the East Bengal Railway has teamed a fleet of 7 C Tournarockers and 2 rubber-tired Tournatractors with rail hauling methods to move 3,500,000 cu. yds. of sand and clay. Much of this material is being used to raise ground level 3 to 4 ft. in and around warehouses to diminish flood danger during the rainy season. Hauls are long — clay is brought in 7 miles from hills behind the city . . . sand is hauled 2.5 to 3.3 miles from the seashore.

Tournatractor spreads 1,500 yds. daily

To move the clay, the engineer-in-charge uses existing rail facilities. 1500 cu. yds. daily are hauled by rail cars and unloaded alongside the tracks by hand labor. Tournatractor then levels back and forth across the tracks without damage to rails, ties, or tires. After grading, Tournatractor lowers dozer blade and cleans the tracks for the

next train. In addition to this assignment, Tournatractor still has time to help East Bengal's second Tournatractor on general dozing and maintenance work around the port area. Rigs drive everywhere at speeds to 19 mph.

Tournarockers haul sand

The 7 Tournarockers haul sand fill from the beach. Carrying up to 18 tons per load, the rear-dumps travel over rough, dusty roads to the port. Loads are dumped in and around the warehouses now under construction. As with Tournatractors, big rubber tires again pay off . . . eliminating wear and tear on "dual" tires where sand packs and sharp rocks wedge in between. With Tournarocker's simplified construction, wider treads, tough carcass and low pressure, practically no maintenance has been required.

"Tournarockers are wonderful machines," says C. A. Valli, executive engineer. "So are the Tournatractors.



Tournatractor spreads clay material unloaded from rail cars. When area 50 ft. wide on both sides has been raised to level of tracks, the rail line will be moved 100 ft. to another raised roadbed, and filling process repeated.

equipment, construction

They do work that crawler tractors could not do. We drive them in minutes from one job to another, where it would take a crawler hours to make the same move."

LeTourneau-Westinghouse "go-anywhere, work-anywhere" teams are speeding earthmoving and lowering net-cost-per-yard the world over. It will pay you to compare these high-speed units with your present off-track equipment. Contact us for a demonstration on your line.

The recent purchase by Westinghouse Air Brake Company of the earthmoving and related business of R. G. LeTourneau, Inc., combines two firms which are world leaders in their respective fields. It brings together the earthmoving know-how of LeTourneau and the precision manufacturing and research experience of Westinghouse Air Brake. You can buy from this strong new company with even greater confidence than before.

Tournapull, Tourmarocker—Trademark Reg. U.S. Pat. Off., Tournatractor—Trademark RD-199-RR



Rear-dump Tournatractor is loaded by bucket conveyor with 15 cu. yds. of



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Sand is spread to raise warehouse floor level 3 to 4 ft.

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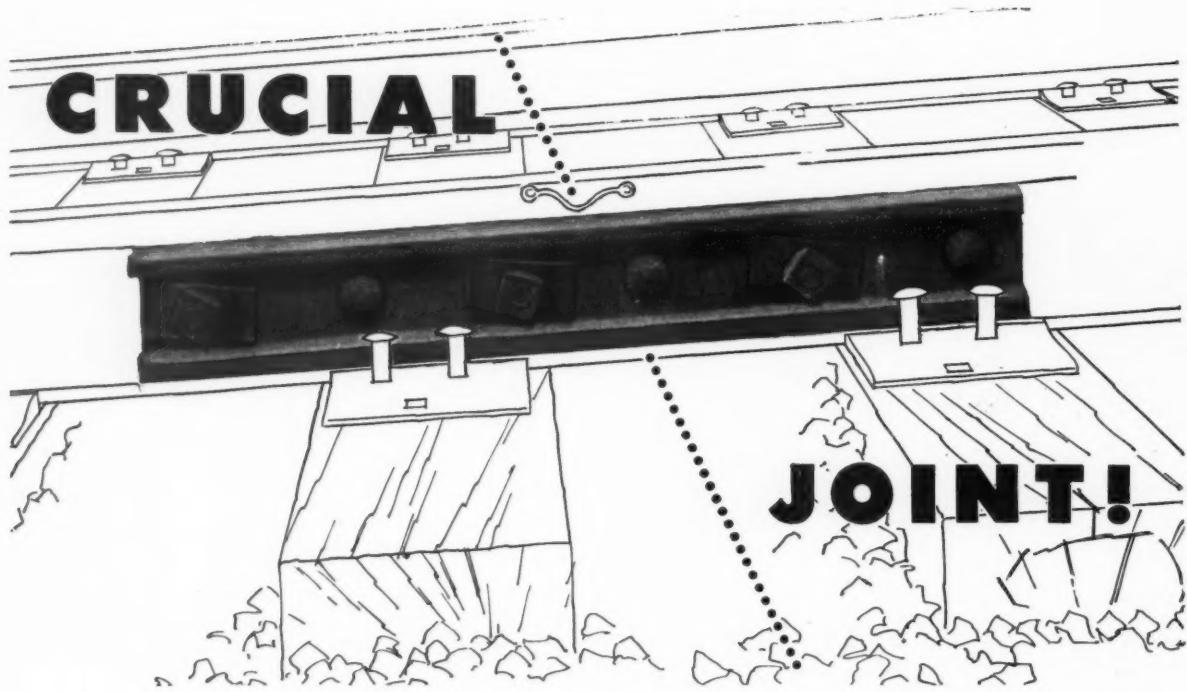
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Railroad

Division

Address

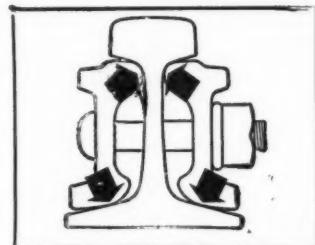
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Protect rail joints with NO-OX-ID "A Special"

Every rail joint along the way is a crucial one. That's why it is so important that correct materials be selected to protect them.

NO-OX-ID "A Special" is a rust preventive particularly suited for this purpose. Its weathering properties insure a long service life, which, in turn, provides protection to prevent freezing of the rail joint and minimize wearing of the joint bar. Easily and quickly applied, it meets all phases of the job condition. Straight, smooth track with the finest riding qualities is assured. Rail bonds, also, are best protected with NO-OX-ID "A Special."



NO-OX-ID "A SPECIAL" PREVENTS "FREEZING"

Arrows mark the fishing areas where non-oxidizing NO-OX-ID "A Special" prevents joint bars from freezing while protecting the metal against corrosion, resulting in added years of service.

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TOOLS



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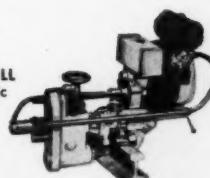


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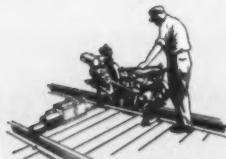


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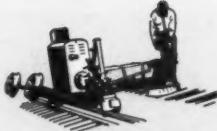
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Maintains alignment while speeding up ballasting and general surfacing operations.



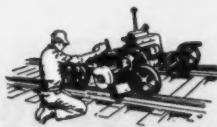
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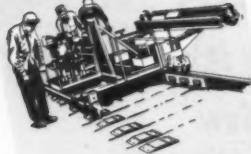
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"Mechanical Muscles"*

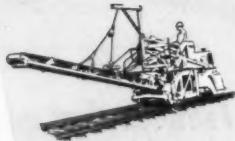
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SPIKE HAMMER ... All spikes driven straight and at big savings in time and money.



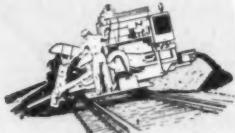
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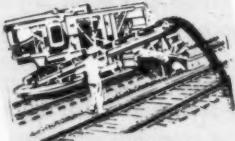
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to do a Better, Faster
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HOMELITE Dual-Purpose **GENERATORS**

FOR MONEY SAVING MAINTENANCE

With a Homelite Dual Purpose Generator you can have plenty of power . . . any spot on your line . . . to operate electric tools. And when we say electric tools, we mean *all* electric hand tools . . . high cycle tools as well as standard universal tools.

This is a real advantage to railroad maintenance men. Even though the trend is to lighter weight, more efficient high cycle tools, you still have a lot of good standard universal tools in your equipment. To keep them going . . . to get the most out of your investment . . . and to take advantage of all new money saving tools, you need both standard and high cycle power.

You get both from the one Homelite Dual Purpose Generator . . . a light weight gasoline engine driven unit that can be put into operation any place you need it . . . fast.

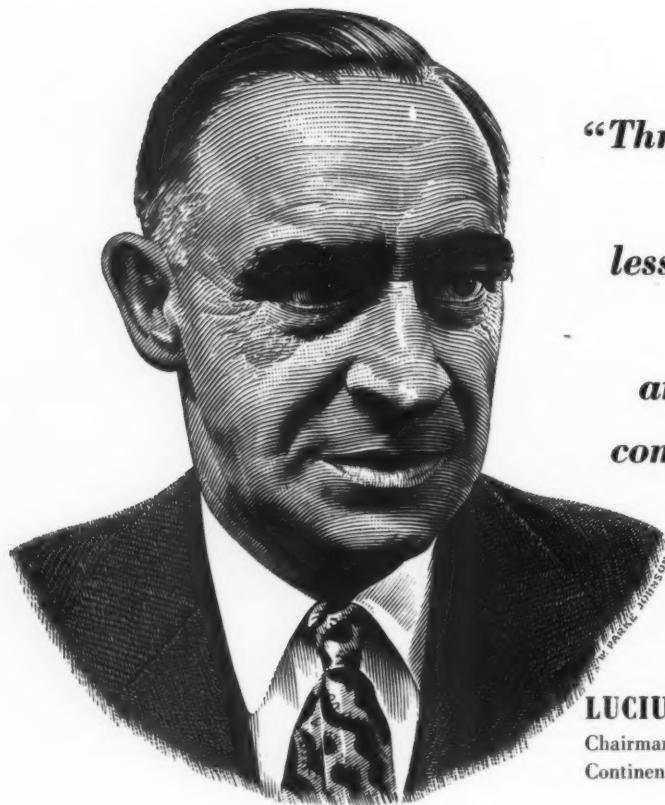
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**"Thrifty citizens . . .
with Savings Bonds . . .
less likely to be taken in
by the false promises
and ideologies of
communist propagandists . . ."**

LUCIUS D. CLAY

Chairman of the Board
Continental Can Company

"The regular purchase of Savings Bonds through the Payroll Savings Plan by millions of our citizens contributes importantly to the country's economic stability, the national defense effort, and to the financial independence of the individual. The thrifty, self-reliant citizen is one far less likely to be taken in by the false promises and ideologies which communist propagandists invariably direct to the 'have nots'."

- To thousands of company executives, accountants, payroll department employees, PSP means Payroll Savings Plan, the simple payroll allotment operation through which employees make a monthly investment in U. S. Savings Bonds.
- To almost eight million employees of nearly 50,000 companies, PSP has a more intimate connotation. To them, PSP spells *Personal Security Plan*.
- Multiply the personal security of a single Payroll Saver by 43,000,000—the number of individuals who hold Savings Bonds having a cash value of \$49.5 billion—and you have economic stability that is the keystone of our national defense.
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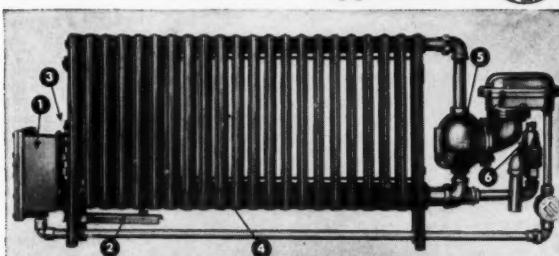


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No. 300 of a series

RAILWAY

TRACK and STRUCTURES

SIMMONS-BOARDMAN PUBLISHING CORPORATION

79 WEST MONROE STREET
CHICAGO 3, ILL.

December 1, 1953

Subject: A Double-Barreled Problem

Dear Readers:

Everywhere you look today there is evidence of rapid and far-reaching changes. You do not have to look any further than your own work to know what we mean by this statement. Railroad men and their supply company friends, aided by intensive research, are vying with each other in the development of equipment, materials and devices designed to put maintenance-of-way work on a more efficient basis. The result is that what was considered good practice yesterday is passe today.

This situation imposes on you the problem of keeping yourself posted on the new developments. I realize what this responsibility means to you, because we, as editors, are constantly confronted with the same problem. I might even venture the opinion that we have a harder row to hoe in this respect than our readers because ours is a double-barreled responsibility. By this I mean we must not only know what's new in your work, but it is also necessary for us to keep up to date on developments in the trade publishing field, especially those of an editorial nature.

Let's take a quick look at some of the problems of the trade magazine editor. He must be forever conscious of the demands made on your time and of the need for giving you a product of such quality that it will compete effectively for a fair share of your spare moments against all the other diversions that our culture offers today. This situation has stimulated drastic changes in the trade publishing field generally. Not only have new techniques of writing and presentation been developed but they are constantly being revised and perfected.

These new techniques are all aimed at a single objective--to make magazines so attractive that the subscriber will be drawn into reading them thoroughly. Briefly stated, the accepted formula for doing this is to use a minimum of words and a maximum of photographs or other illustrations for telling the story. But making the magazine easy to read is not enough; dramatization of the contents is necessary if they are to command your attention.

Therein lies a pitfall for the unwary editor. If he comes to rely too much on the dramatic effect he may conceivably lose sight of the reader's need for factual information. To the extent that this happens the magazine, while being pretty to look at, will no longer be serving its intended purpose.

Our objective in editing Railway Track and Structures is to achieve just the right balance between all the ingredients we think are necessary in a successful trade publication. We hope you will find them in this and every other issue.

Yours sincerely,

Mervin H. Dick

Editor

MHD:lw

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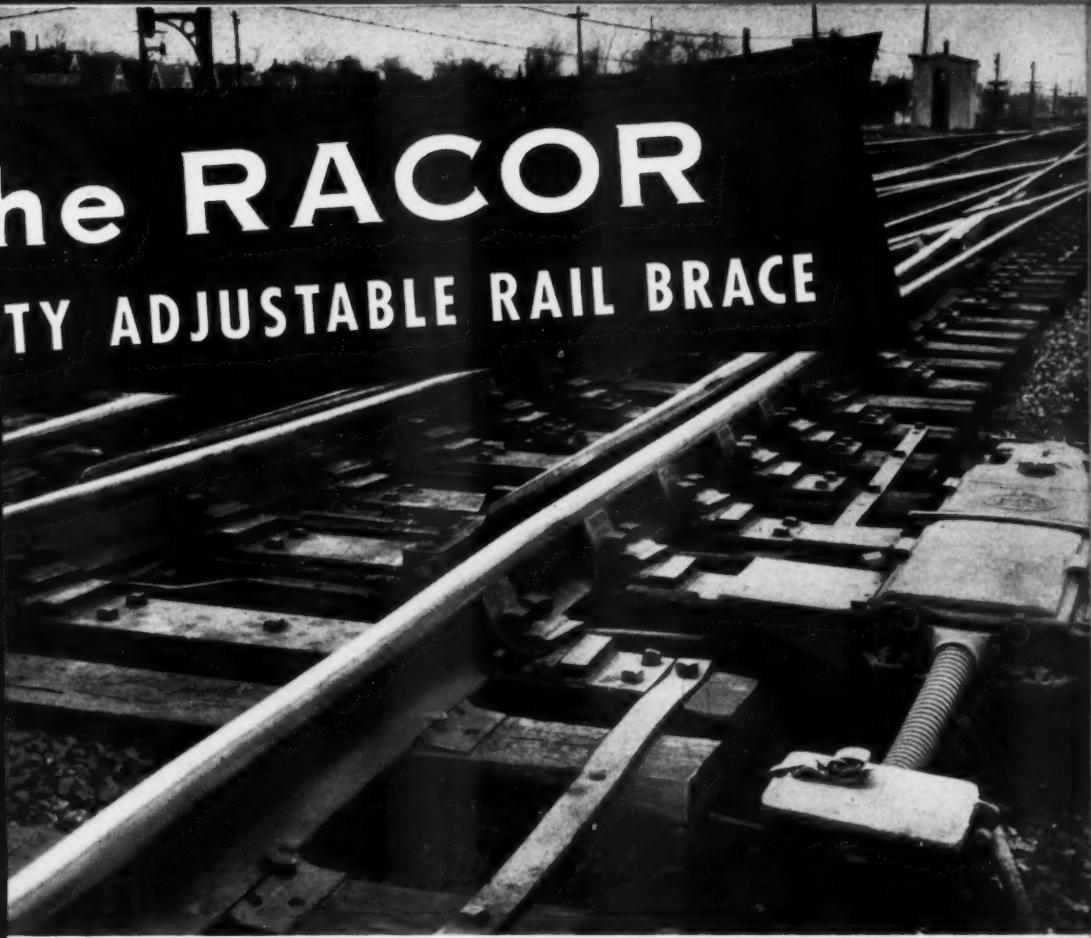
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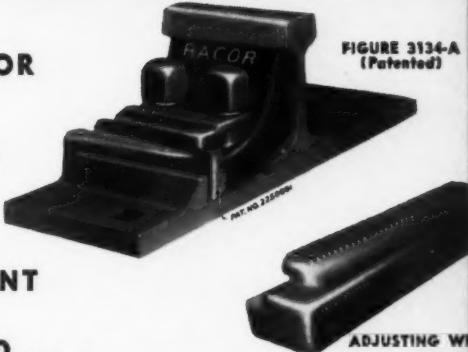
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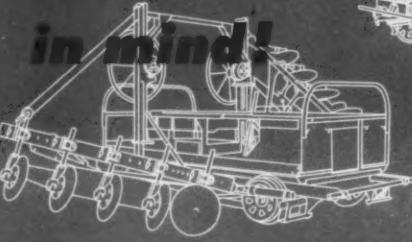


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TRACK and STRUCTURES

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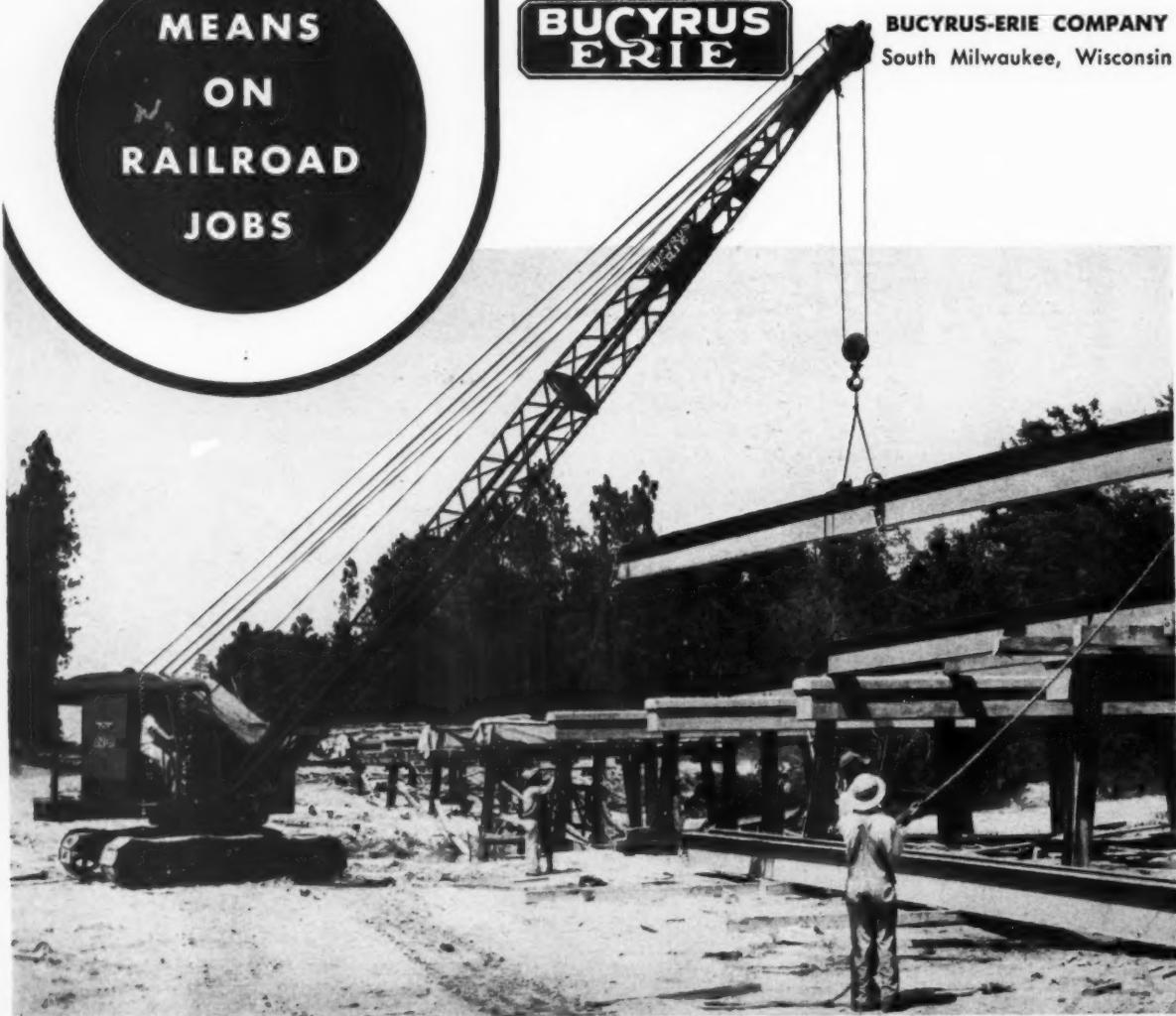
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Why Not Publicize M/W Advances?

Most Americans are natural-born "sidewalk superintendents." Because of their "superintending" activities many city dwellers are fairly familiar with technological progress in the building construction field.

On the other hand, we suspect that the average citizen is completely ignorant of the great advances that have taken place in the methods and equipment used in railway maintenance-of-way work. Many people know what a "gandy dancer" is, but many of them doubtless take it for granted that he does his work in the same pick-and-shovel style that prevailed 50 years ago. But it is hardly fair to blame the public for its lack of knowledge of railway maintenance activities. Only rarely is such work visible to the public, and practically nothing has been done to publicize it outside the railway field.

Since so many people have the impression that the railroads are backward, the industry would be certain to acquire greater prestige if the pub-

lic were to become more familiar with the advances in M/W work.

How can this knowledge be transmitted to the public? There are doubtless various ways of doing this, but to us it seems that the New Haven has hit on an effective method. This road invited a considerable number of business and newspaper representatives to view one of its fully mechanized rail-laying gangs in action. For this occasion a reviewing stand was set up at a likely point where the guests could have a good view of the gang as it progressed down the track.

The reaction was everything that could be expected. Frequent verbal expressions of amazement were heard, but the most encouraging development was the space given to the occasion in the public press.

In the days of the steam locomotive many a youngster wanted to grow up to be a locomotive engineer. Perhaps now, with wider public knowledge of M/W work, they will want to be maintenance-of-way engineers.

Supervisory Trends in Track Work

If you could take the time to review the statistical figures of the I.C.C. for the years 1939 to 1952, inclusive, you would observe some recent trends.

In 1939, 132 track employees were required for each billion gross ton-miles of traffic handled by the railroads. In 1945, 116 men were required for the same purpose, and in 1952 only 99 men.

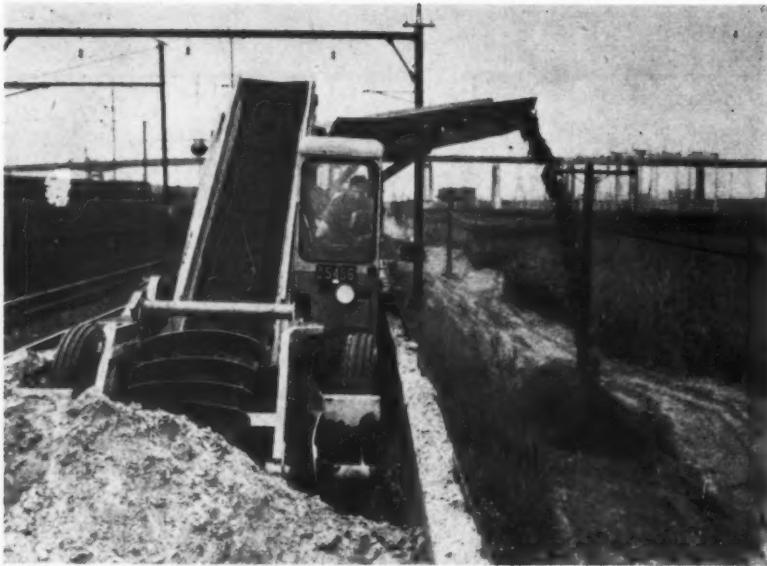
The increase in work output reflected by these figures was paralleled by a similar uptrend in work-equipment purchases. Thus, while the railroads spent only \$6 million for work equipment in 1939, these purchases increased to \$17.5 million in 1945, and to \$20.7 million in 1952. Unquestionably, the trend toward work equipment had effected a substantial increase in output.

Exploring the statistical figures further, the reviewer finds that the ratio of foremen to sectionmen remained fairly constant during the en-

tire period, varying from 4.02 to 5.70 men per foreman. There was a slightly greater variation in the supervision of extra gangs, with the ratio ranging from a high of 1 foreman to 10 men to a low of 1 foreman to 12.9 men. Since 1945 this ratio has held at 1 foreman to about 11.4 men.

However, for roadmasters, general foremen, and their assistants, the change in supervisory trend is more noticeable. In 1939 there was one of these supervisors to every 65 men employed for track work. Thereafter the number of men for each supervisor showed an increase until it reached a peak of 77 men in 1945. However, since that year the trend has been to furnish more supervision, so that the ratio for 1952 was one supervisor to every 56 men.

It is quite logical to expect that the greater the mechanization of track work, the greater the need for more supervision.

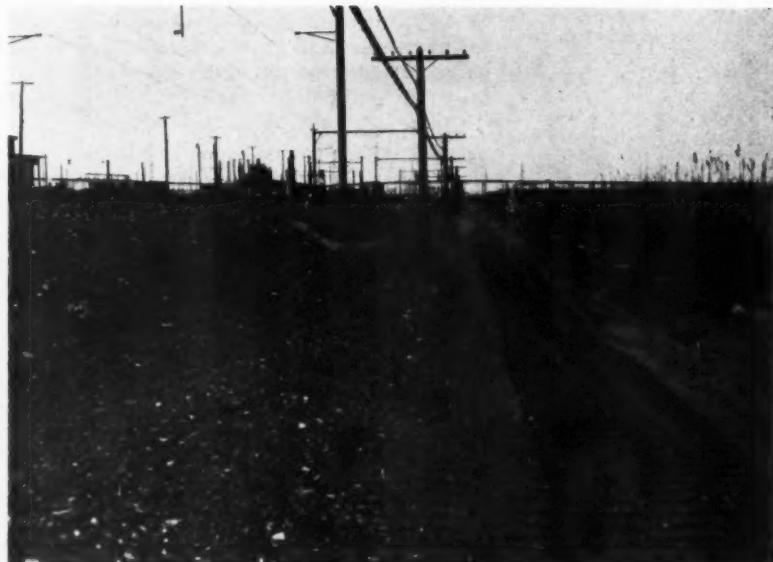


The Lackawanna needed a roadway for its own vehicles along a section of line in New Jersey that traverses swampy ground. The job was done by using a track-cleaning machine to unload the necessary fill material from drop-end gondolas. This article gives details of the equipment and procedure used.

Track Cleaner Unloads Material...

For a distance of about three miles along its Morris & Essex division in New Jersey, between Kearny and Jersey City, the Delaware, Lackawanna & Western has a new roadway along the north side of its tracks for the use of highway vehicles operated by railroad employees in the course of their duties. However, the fact that this roadway has been built is not particularly important or unusual because the Lackawanna has for a number of years been carrying out a program to provide such roadways along its tracks wherever they were needed for the use of company vehicles. The important thing about this particular job is the manner in which the roadway was built.

The construction of this roadway required the transportation and placing of a considerable amount of fill material. Any one of a number of types of equipment could have been used for the job, but the Lackawanna chose to use a pneumatic-tired track-cleaning machine for unloading the material along the tracks from drop-end gondolas. The machine used for this purpose was an Athey No. 18 Hiloader track cleaner, a machine which the railroad had acquired several months previously. This machine, mounted on four pneumatic tires, has a digging and gathering mechanism at the forward end which delivers the material picked up to an inclined conveyor, which,



...To Form Roadway Alongside Tracks

in turn, discharges it onto a swivel conveyor with a length of 18 ft. and a swing of 110 deg. The conventional purpose for which the Athey track cleaner is designed is to pick up dirt and refuse from main or yard tracks and to load it into cars on adjacent tracks.

Hence, its use for unloading gondolas represents a departure from usual practice.

In the vicinity of where the roadway was built the Morris & Essex division consists of three main tracks and is electrified. In this territory the line traverses the

swamp-like Jersey flats which are overgrown with a thick stand of swamp grass that grows to a height of 7 or 8 ft. Previous to the construction of the roadway the grass grew up to the shoulder of the roadbed, which meant that the growth surrounded the poles of the railroad's wire line. As a consequence, the possibility of fire in the swamp grass presented an ever-present hazard to the pole line.

The trend on the Lackawanna is to provide its section, signal and electrical forces with highway trucks for getting to and from the job. In the territory between Kearny and Jersey City the nature of the terrain on both sides of the tracks made it impossible for these vehicles to operate along the right of way. It was decided, therefore, to build a roadway along the north side of the tracks. A consideration in reaching this decision was the fact that the placing of the fill for the roadway would automatically kill the swamp grass for a distance of several feet beyond the pole line, and would, therefore, remove the fire threat to the poles.

Waste Used For Fill

The project entailed the loading, hauling and placing of sufficient material to construct a roadway approximately 25 ft. wide and 2 to 3 ft. high above the ground line. The material used consisted largely of waste and refuse obtained from the Lackawanna's Advance yard at Secaucus, N.J., which is a two-track yard at which cars are cleaned. For hauling the material, 70-yd. drop-end gondolas were used, which, for the most part, were loaded by a truck-mounted crane and a crawler crane, both using clamshell buckets.

Unloading the Cars

These cars were hauled to the site of the new roadway in strings of 13 to 15 cars. The Athey track cleaner, facing to the rear, was carried in the car adjacent to the work-train engine. On arrival at the site the cars were unloaded by simply operating the track cleaner through the entire string, with the swing conveyor being so positioned as to deposit the material in a windrow the desired distance from the track. As the unloading proceeded, the train moved forward slowly to obtain the desired distribution of the material. When moving the machine from one car to another, the distance between



EMPTIED SERIES of gondolas as seen from head end of train during unloading operation. Track cleaner unloaded single cars in 16 to 20 min.



RAMP BOARDS, consisting of 4-in. by 12-in. timbers 6 ft. long, were used when moving machine from car to car. This operation required only a few minutes.



ONLY LABOR required were two men for removing boards and other objects from the material to be unloaded. Swamp grass formerly grew up to roadbed shoulder.



SPREADING of unloaded material was done with International tractor-bulldozer. Roadway extends out beyond pole line and protects poles from fires in grass.

them was bridged by two 4-in. by 12-in. timbers, 6 ft. long.

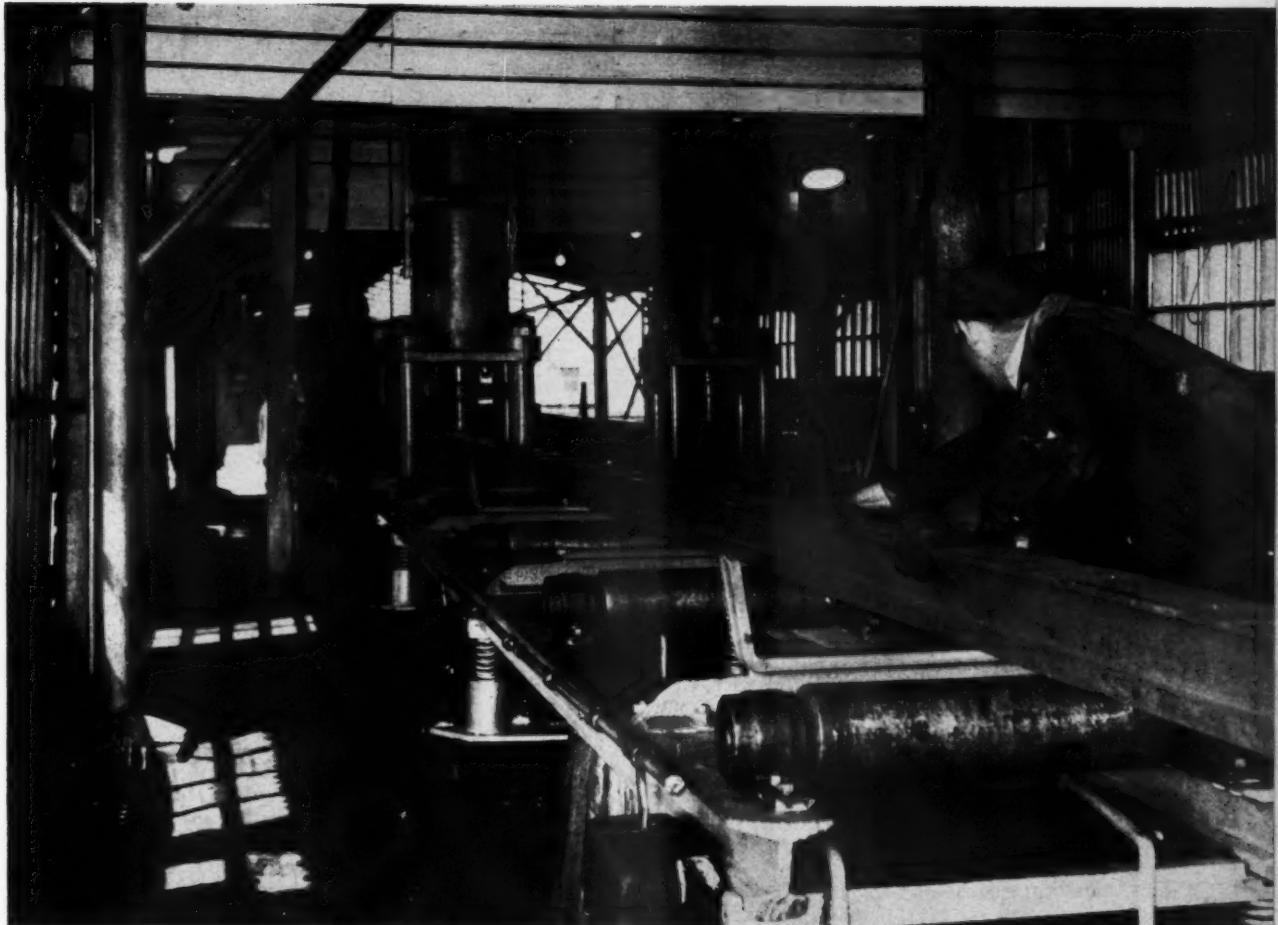
During the unloading procedure only two laborers were required on the work train. These men were needed to remove stones, boards and other foreign objects from the material in front of the cleaner and to handle the ramp boards when moving the machine from one car to another. The only other personnel, in addition to the work-train foreman and the operator of the track cleaner.

Since the Morris & Essex division handles a heavy commuter traffic, it was necessary to wait until the peak of the morning rush hour was past before starting work. Between 9:30 a.m. and 1:00 p.m., the work train had uninterrupted use of the northerly track, and during this period the catenary was de-energized. Since the track cleaner could unload a single car in from 16 to 20 min. little difficulty was experienced in unloading the entire string of cars in the time available each day.

Bulldozer Spread Material

As placed on the ground the material for the roadway was in the form of a windrow of varying height depending on the amount required. For spreading and compacting it an International TD-6 crawler tractor equipped with a Bucyrus-Erie dozer blade was used. At suitable intervals the roadway was made somewhat wider than 25 ft. to allow space for vehicles to be turned.

As this roadway was being built, plans were already being made to construct a similar roadway two miles long at another location. This type of work is only one of several operations for which the track cleaner is being used on the Lackawanna. One of these, obviously, is that for which the machine was originally designed, namely, the cleaning of yard tracks. Where this is done the waste material is loaded into gondolas and is disposed of by unloading it along the track shoulders where widening is indicated or stockpiling it for possible future use again using the track cleaning machine for the unloading operation. Another job for which the track cleaner is used is the unloading of cinders to widen the shoulders in advance of out-of-face surfacing operations. Where this is done the window of cinders is leveled with a Jordan spreader.

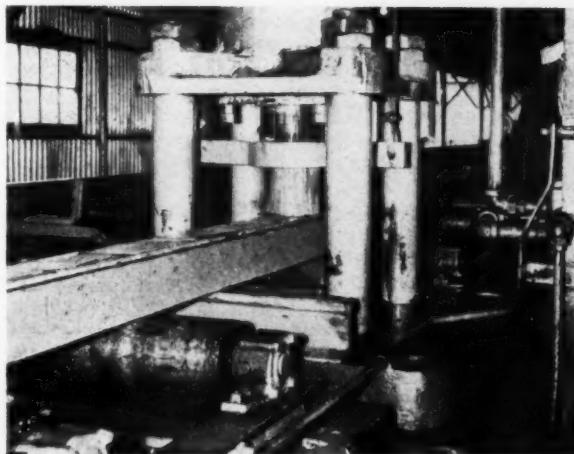


Straightening of the rails is done on one of two presses. Special long-treadle controls make it possible for operator to

control press while sighting along rail. Measuring of wear and classification of rails is also done here.

Special Devices Aid

Rail Cropping on the Southern



HYDRAULIC PRESSES are used for straightening rails.

All rail removed from track during relay operations on the Southern is now sent to central plants to be reclaimed by straightening, cropping, drilling, etc. Two of the three cropping plants now in use are equipped with friction saws and several special devices for facilitating the operation. These plants are described in this article.

- Through development of mechanized devices for special operations and close supervision of the work the cost of reclaiming rail on the Southern has been progressively reduced. The results of reclaiming rail at central plants has been so satisfactory that this road has adopted the practice of sending all rail to a reclamation plant. As a consequence, a large percentage of rail formerly classified as scrap is now being straightened,



CROPPING of rails is done with 48-in. friction saw. Cropped ends go by conveyor to scrap pile.



DUAL MULTIPLE DRILLS bore holes in rails. Two or three holes may be drilled depending on whether 4 or 6-hole bars are to be used.

cropped and otherwise reclaimed for use in industry and other little-used tracks that carry comparatively light traffic loads.

Present practices in rail reclamation on the Southern had their inception during World War II. At that time it was not possible to obtain delivery of a large percentage of new rail needed to maintain good rail conditions. New rail was available only in quantities which would supply rail for lines of heaviest traffic densities, leaving a serious problem of maintaining satisfactory rail conditions on those lines which are considered to be of secondary importance.

Field Cropping Tried Out

Something had to be done. The reconditioning of rail by cropping the portion covered by the old joints and relaying it with new joints seemed to offer the best possibilities of solving the problem of supplying satisfactory rail for the maintenance and construction of lines of lighter traffic.

One of the first programs involved the field cropping of rail using portable saws. This was adopted to avoid the expense and delay of shipping rail to and from central cropping plants. Eighteen inches were cut off from each end of 33-ft. rails so that 11 rails replaced 10. This proved effective but was expensive and it was found that interference with traffic was too great. It was also difficult to get accurate field drilling of the bolt holes.

The next program tried was assembling the released rail in central cropping plants where the ends were cropped with oxy-acetylene torches. This method reduced the cost of cropping. The accuracy of the bolt-hole drilling was improved by the use of stationary drills. This method is still used on the Georgia, Southern & Florida, a subsidiary line. The GS&F has greatly improved its rail condition by a program of cropping and relaying rail. It has permitted the reconditioning of a maximum amount of rail with a minimum purchase of rail. Most of the rail purchased has been relay rail re-

conditioned by cropping, which is laid with new joints.

In 1946 friction saws were introduced at two main cropping plants at Pomona, N.C., and Knoxville, Tenn. All system rail cropping, except for the GS&F, is now done at these plants. They have the same equipment and do the same work except that no welding of engine burns is done at Knoxville because of lack of space. The plants are completely mechanized. The following description applies to the road's rail-cropping operation at Pomona.

The rail to be cropped is received in low-side gondolas and is unloaded onto rail skids with a locomotive crane. The inbound skids are sloped to the conveyors and the outbound skids are sloped away from the conveyors. The rail is drawn from the inbound skids to the conveyor mechanically by a homemade air-operated device. The conveyors are of the roller type with ball bearings.

Rail Straightened and Classified

After the rail is drawn to the conveyor from the skids it is moved on the conveyor to one of two rail presses where it is straightened and all kinks removed. Special long-treadle controls were developed so that the press operator can control the press while sighting along the rail. At this point the rails are measured for wear and classified for main-line relay or side-track and industry-track use.

From the presses the rail is passed on the conveyors to the saw house where it is cropped with 48-in. friction saw. The cropped ends are placed on a side conveyor and conveyed mechanically to a scrap pile for loading and sale. A crane with a magnet is used for loading these scrap ends. The scrap ends command a premium price and it is reported that their sale practically covers the cost of the cropping program.

From the rail saw the rails move through the drill house where two multiple drills bore two (or three) holes in each and as required for four (or six)-hole joints. These drills provide accurate spacing and posi-



FINISHED rail end. Corners have been chamfered with power grinders and burrs have been removed from holes with countersinking tools.



OUTBOUND RAIL has been kicked onto skids after carriage at right has towed it into position.

tioning of the holes. As the rails come from the drills the corners are chamfered by power grinders and the burrs are removed from the bolt holes with special three-fluted countersink drills.

From this point the rails are conveyed by a specially-designed gasoline powered carriage to a point opposite the outbound skids. This contrivance operates on separate rails and has a quick friction clamp for engaging the rails and a quick release upon arriving at the proper skid. The rails are placed on the skids with an air-operated kicker. This device enables the conveying of all rails from the drill house and the placing of them on the outbound skids where they are then to be handled by one man.

Outbound skids are provided for sorting rails by classes for future service and for those requiring the building up of engine burns by welding. The engine-burned rails are built up while lying on the skid beds, which minimizes the necessity for moving the welding equipment.

The loading out of the reclaimed rails is done with the same crane which is used for unloading. Care is taken to match rails of the same wear, both of the head and that due to curvature, so that a smooth job of re-laying can be accomplished. The rails are loaded with the gage sides all one way to minimize the need for turning the rail in the field. Wood strips are placed between the successive layers of rail to facilitate their unloading.

The saw and drill houses are completely enclosed and sheds provide protection for all-weather operation over the conveyors, presses and the outbound skid where engine burns are built up. The other outbound skids and the inbound skids are not covered.

Results Satisfactory

After several years' experience and the cropping of some 2500 miles of rail the methods and results now used are considered satisfactory. The building up of large numbers of engine burns has resulted in improve-



DRIVER BURNS are built up by welding while reclaimed rails are lying on skid beds ready for loading.

ment in riding qualities, and evidence is said to point to the conclusion that fewer fractures have occurred in rail since this program was started.

The reclamation yards have enabled the Southern materially to improve the rail conditions on its secondary traffic lines by furnishing them with better quality relay rail. New rail applications are generally held to the primary lines where heavier rail is needed. This has resulted in an overall build-up of the rail condition with a smaller quantity of new rail and an overall saving of essential steel products.

For Cleaner Diesel Operation . . .



LONGER LIFE for diesel engine piston rings is expected as a result of tunnel cleaning operation.

Dirt of any kind along the right of way that may get into the engines adds to the cost of diesel-locomotive maintenance and repair. On the Clinchfield there are many sources of such dirt the most important of which were the coatings of soot, ash and dust that had accumulated on the linings of the road's 55 tunnels. How these coatings were removed is told in this article.

By J. M. Salmon, Jr.,
and W. A. Baker*

● Dirt and diesels are not compatible. In fact, most of the locomotive builder's representatives will attribute any type of failure to either dirt or poor maintenance.

Filter maintenance has been a problem since the diesel locomotive made its first appearance on the American railroads. It is a controversial subject that has brought about many papers and general discussions. Various designs of filter elements have been offered to the railroads as the final answer to trapping dirt. Several different kinds of

automatic washing and oiling machines, and a variety of industrial cleaning compounds have been developed for servicing the filter elements. Much time and expense have gone into research concerning the different types of adhesives and filter coatings presently on the market. With all the effort and money that has been spent on the problem of filter maintenance, the filters still get dirty and the dirt still finds its way into the engines and around the moving parts of the locomotive.

Must Eliminate Dirt

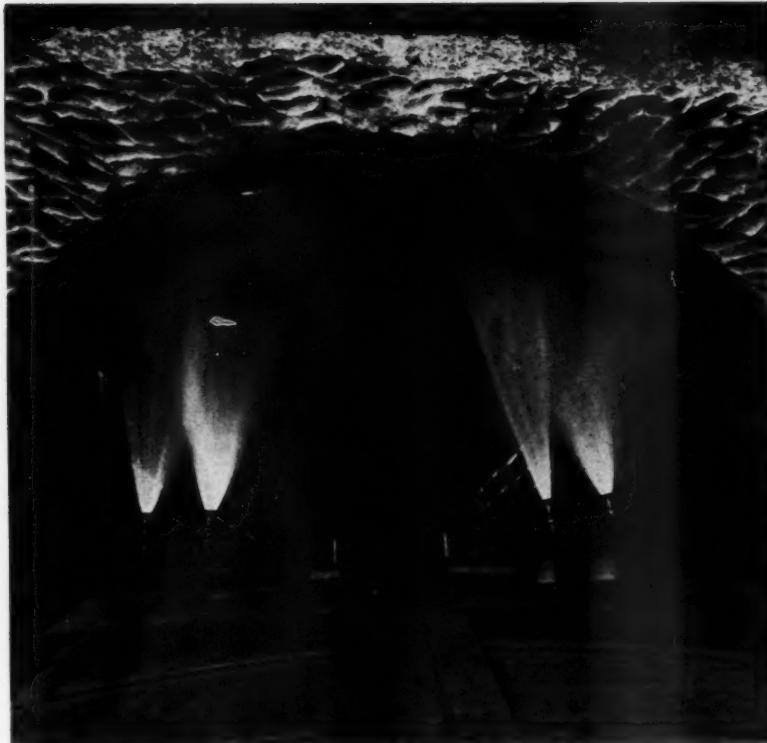
We on the Clinchfield have sought ways to eliminate the dirt before it could reach the filters and subsequently find its way into the engines. This could be made possible only by eliminating the sources of the dirt, of which there are many along our right of way, such as cement plants; feldspar and mica grinding plants; crushed stone plants; shale and refuse from coal and mineral mines; numerous dirt roads adjacent and parallel to the track; and 55 tunnels aggregating

9.7 miles in length, which constitute 3.4 per cent of our main-line trackage.

The tunnels seemed to be our greatest source of dirt, because after 40-odd years the steam locomotive had left its mark. The crown sections were coated with a deposit of soot, fly ash and sand dust to a depth of from 1 to 3 in. The horizontal crevices of the unlined tunnels were covered with large quantities of loose abrasive dirt. Since diesel locomotives first began operating through the tunnels this dirt has been disturbed because, generally, the units are either under full power or full dynamic braking. As the cooling fans, brake blower fans, and exhaust disturbed this dirt the filters of trailing units picked up some of it and brought back to our filter-cleaning equipment that which had not passed through to the engine. Eventually the tunnels would have become self-cleaned to some extent by this operation, but it would have been a long and costly process.

In discussions prior to cleaning the tunnels, it was agreed that the

*Mr. Salmon is chief engineer of the Clinchfield and Mr. Baker is general diesel supervisor. Both have offices at Erwin, Tenn.



SPRAY CAR removed an estimated four tons of dirt from one tunnel alone.

Tunnel Linings

most economical and practical method available would be to flush the crowns and walls of the tunnels with a large volume of water under pressure. To perform this operation, Spray Services, Inc., Huntington, W. Va., was engaged.

How Tunnels Were Cleaned

The equipment used by the contractor included a spray car, ten 8,000-gal. tank cars and two work-equipment box cars. Connected to the spray car were five tank cars ahead, two box cars, and five tank cars trailing. Both of the box cars were equipped with sloping skirts along the lower edges of the side sheets. These skirts were extended outward two feet to deflect the water and dirt into the ditch line to prevent fouling of the ballast. The spray car, which is normally used for spraying brush-killing chemicals along railroad right of ways, is equipped with two pumping units capable of delivering 180 psi at the nozzle under full load.

The cleaning operation was started at Marion tunnel which is

1,073 ft. long and concrete lined. The first trip through the tunnel was made at 10 mph, with the spray nozzles set perpendicular to the tunnel walls. The results were disappointing in that the sprays packed the dirt to the walls and the train speed was too great. We then set the nozzles at a 60-deg. angle to the walls and passed through again at 4 mph with better results. Subsequently three trips were made through each of the 55 tunnels, which are both lined and unlined.

At Sandy Ridge tunnel, which is 7,854 ft. long and concrete lined, we decided to make one trip through and let it soak overnight. This did not prove of any value as the dry dirt and concrete soaked up the water and it was still necessary to make three trips the next day. Sandy Ridge tunnel was our worst offender; since it is approximately a mile and a half long and on a .5 per cent grade, double-heading steam locomotives in the past had deposited large amounts of dirt on the lining. It is estimated that we washed out four tons of dirt from this particular tunnel and propor-

tionate amounts from the other 54 tunnels. There are some spots left in the tunnels, but they are grease and oil soaked and will give no trouble.

In wet tunnels the cleanings were flushed away by natural flow in the side ditches. Dry tunnels had their ditch lines cleaned by section forces to avoid engines picking up the debris which had been washed down.

This operation was tried on a purely experimental basis. Neither the railroad nor the spray company had attempted such work previously, and considerable knowledge was gained which will be beneficial in any future undertaking of this type. It was agreed that a higher water pressure than was available is required and that the arrangement of spray turrets on the conventional brush spray car is not best suited to this operation. Proper pressure, proper location of nozzles, and the proper type of nozzles will increase the efficiency. The contractor is interested in this problem and it is believed that this work can be carried on concurrently with brush or right-of-way spraying by stopping at a tunnel portal, clamping the nozzles in proper position, cutting out the chemical, increasing the pump pressure, and spraying through the tunnel with water.

Savings Will Exceed Cost

It is estimated that we should realize a minimum of 3.4 per cent greater piston-ring life as the result of this work. This saving in one year exceeds the original cost of the tunnel washing, and any increase in the life expectancy of the piston rings above this percentage will be a net increase in savings. Certainly filter benefits will be derived, but no monetary value was placed on these benefits.

It is too early as yet to see the full results of this cleaning operation; however, it is possible to ride the rear cab of a four-unit consist through tunnels now without being covered with dirt. The maintenance of way department has benefited in that the rock tunnels can be scaled more easily and the removal of acid-bearing dirt will add to rail and track accessory life. We do know that our greatest source of dirt has been virtually eliminated, and, since the diesel itself is not altogether pure, this tunnel-washing operation may require repeating. There are many more sources of dirt which have yet to be eliminated, but we are on our way toward cleaning up the Clinchfield.

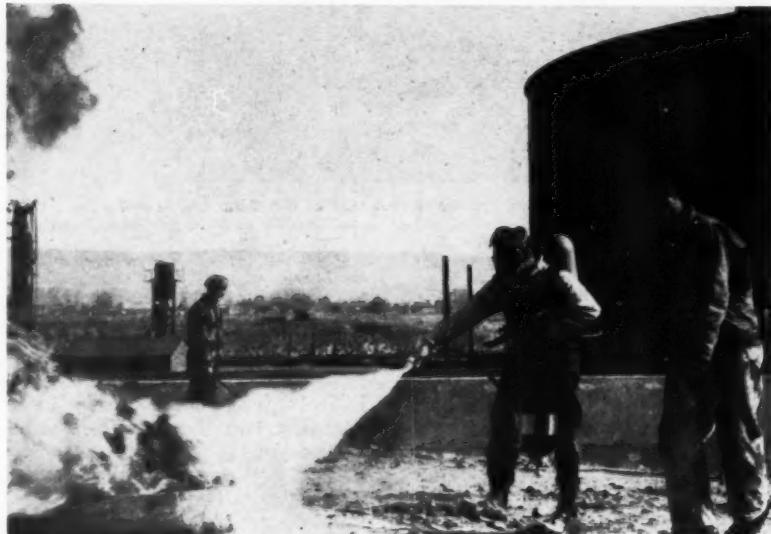


Fire Protection at Diesel Facilities . . .

● The widely distributed properties of the railroad companies make it necessary to conduct all educational efforts with respect to fire hazards and the use of fire-protection equipment through occasional meetings, regular demonstrations and special literature for distributing information pertaining to current subjects.

There are three general methods of introducing and emphasizing the principles of fire prevention and protection in railroad properties. These are (1) proper engineering, (2) enforcement of instructions governing fire hazards and their control, and (3) general education in fire-prevention practices.

Sound fire-prevention engineering will be reflected in the design and construction of buildings and equipment to reduce all possible fire hazards, in the proper spacing of buildings to prevent congestion and possible conflagrations and in the provision of adequate yard mains, hydrants and fire-protection equipment. The elimination of controllable hazards and the enforcement of fire-prevention regulations and instructions are absolutely necessary to prevent the occurrence of fires even in the best of properties. The general education of employees in fire-prevention activities is receiving more and more attention and various methods have been developed and are used by the fire-prevention departments of the railroad companies.



DRY-CLEANING extinguisher being used on oil by employee wearing gas mask.

This is the final installment of the series. Although the suggestions made by Mr. Wicker for assuring effective action on the part of employees in the event of fire apply particularly where diesel facilities are involved, they may be used as a guide to fire-protection training in a more general sense.

LEFT—Fire-prevention instruction car of Great Northern. Various types of fire extinguishers are shown on display.

RIGHT (opposite page)—Fifteen-pound carbon dioxide fire extinguisher being used on oil-spill and vat fire.

Part V—Training

Supervision and personnel should, above all, be adequately trained and made thoroughly acquainted with the fire-protection equipment they may be required to use. It is necessary for this purpose to plan an extensive program involving the actual extinguishment of simulated fires of various types and intensities by the men who will be called on to protect the equipment or property in case fire occurs. Even the best of fire equipment is less effective in the hands of inexperienced men.

Visual education by means of

posters and bulletins has been instituted by most railroads, particularly by use of the posters issued by the Association of American Railroads, the National Fire Protection Association and the underwriters. Publicity is also secured through posters dealing with specific hazards. A number of railroads issue monthly fire-prevention bulletins giving not only a pep talk based on the causes of fires occurring during the month but also a list of locations of the fires with types of properties involved and estimated losses. Fire-prevention



SHOP BRIGADE being instructed in use of foam on fire of gasoline and oil.

of Personnel

meetings are held on some railroads as frequently as once a month. Such meetings provide a forum for discussion of fire hazards and causes and the exchange of ideas about prevention and protection. It is necessary and desirable that supervisors discuss the results of such meetings with the employees under their jurisdiction. Special committees or groups at many shops, stations and terminals have created increased interest and secured better attention to fire prevention and protection in their respective territories. Positive re-

sults achieved in many sections by the efforts of these groups have been the subject of favorable comment.

A Mobile Instruction School

One large railroad has converted an old baggage car into a complete fire instruction and demonstration car. This is sent to division points and other locations where demonstrations are given to instruct employees in the proper use of the several types of fire-protection equipment maintained on the system. This car is equipped with every type of extinguishing unit used on the railroad and includes, in addition to hand extinguishers, a large water tank, a motor-driven

By W. S. Wicker

Chief Engineer
Transportation Mutual Insurance
Company
Philadelphia, Pa.

fire pump for supplying 1½-in. hose combining solid stream and fog-type nozzles, and a proportioning tank for a pre-mixed foam solution.

The training of personnel is usually done by arranging simulated fires of varying sizes at safe distances from fixed properties and rolling equipment and showing employees which extinguishers are adapted to the different types of fires and how to use them effectively. Since it is advisable for employees actually to use some of the units in order to act with confidence when necessary, the fires are then relighted in sequence and interested employees are invited to use the extinguishers. As a rule most of the employees are eager to try the extinguishers and thereby learn the various capabilities and limitations of each type. Preparation of additional aids to fire-prevention thinking, such as movies and slide films, is in the planning stage. While constant search is being made for better and more scientific methods of fire control it is still necessary at this time to continue to rely largely on personal demonstrations for railroad fire-prevention training.

Reporting Causes of Fires

In fire-prevention work an important detail is prompt advice when fires occur. This is not merely for the record but to afford early investigation before any evidence is removed. Determination of the cause of a fire may depend on some factor that may be overlooked by untrained employees. Through a study of the causes real fire prevention is promoted by making it possible to remove conditions that previous investigations have proved to be hazardous. Incidentally, a small fire may reveal more important facts for use in fire-prevention education than one of greater size with no unusual features or with all possible evidence as to the cause destroyed. The careful training of employees in supervisory capacities assures full cooperation in the prompt reporting of all fires, regardless of magnitude. To emphasize the necessity of promptly reporting fires some

railroads print these words on the covers of insurance schedules: "In case of fire or lightning damage wire immediately to the insurance department."

Fire brigades are necessary at railroad shop plants even when municipal departments are available. In case of fire, however, the city departments where available should be called immediately, regardless of whether a local brigade is maintained. Some of the reasons for maintaining well-trained shop fire brigades are:

(1) Plant forces can frequently extinguish a fire before the city department arrives and thus reduce the severity of the loss.

(2) The city department may be on another call. This is particularly true in cases where an adjacent conflagration has exposed railroad property.

(3) In many railroad shop plants the city firemen are not always familiar with local conditions and hazards, the fire-protection layout and the water supply.

(4) Railroad shops are usually located at the outskirts of cities or towns and frequently outside the corporate limits.

(5) Smaller communities have limited manpower for fire brigades.

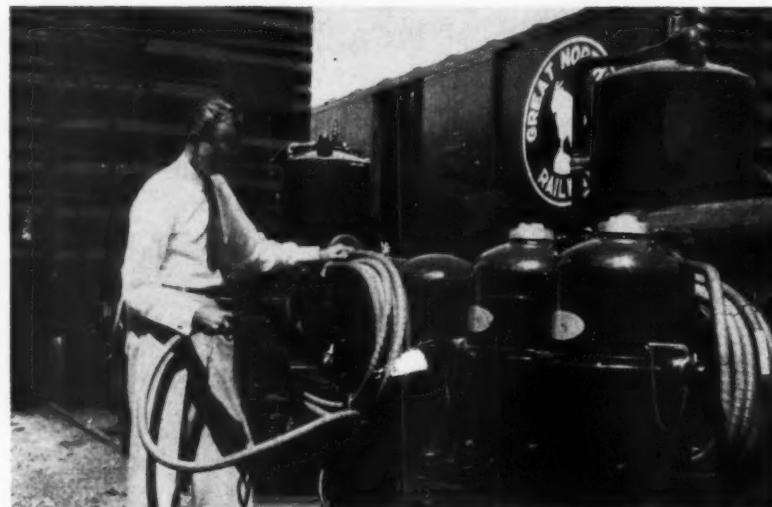
Training Fire Brigades

In some large plants motorized paid fire departments are maintained. Other shop plants maintain fire brigades consisting of the chief, an assistant chief and as many members as are necessary to man the equipment. Adequate training is essential and drills at which the men are given an opportunity actually to handle the equipment at periodic intervals are desirable. To be effective the training of brigades must include monthly briefings on fire hazards, instruction on how to make regular inspections, and the making of arrangements for shutting off electric power in buildings in case of fire.

Regular inspections by the shop fire chief assure thorough familiarity with the property. Such inspections facilitate the formulation of plans for procedure in case of a fire. When instructing employees in the proper methods of fire fighting, emphasis is placed on the importance of using proper equipment. Care is also taken to see that every employee knows the locations of fire boxes or telephones for calling assistance if fire is discovered.



USE OF FOAM on oil fire is demonstrated here by fire brigade. This view, along with others on this page, show fire prevention activities on Great Northern.



FIRE-PROTECTION CAR especially equipped by the Great Northern for use at its Cascade tunnel. One of these cars is maintained at each end of tunnel.

The men on shop fire brigades are preferably selected from different parts of the plant so that some one on the brigade is familiar with conditions in the place where a fire may occur. It is desirable to select men young and active enough to handle the equipment rapidly and effectively and who can leave the job without materially interfering with shop operations. Some of the railroads provide an incentive to serving on fire brigades by furnishing annual passes to members of the brigades and their families. This has the double advantage of holding the interest of the younger and more active men and avoiding complaints from older employees whose years of service already en-

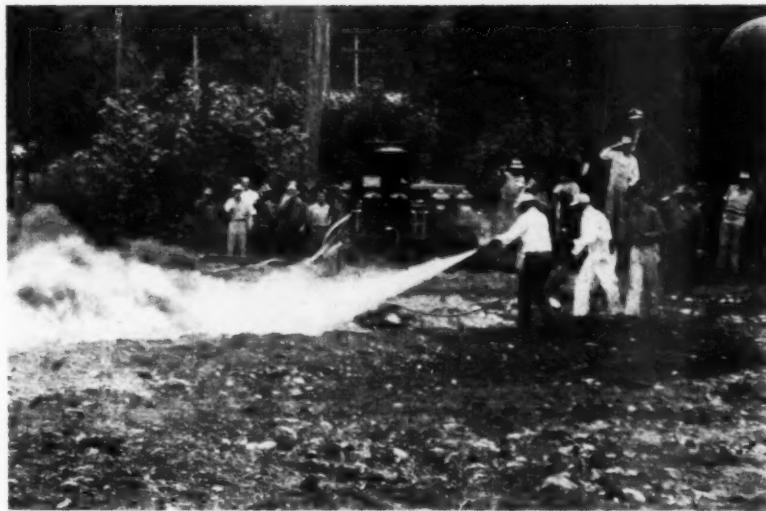
title them to the pass privilege but whose seniority would possibly make them also feel entitled to any additional monetary recompense that may be given for membership on the fire brigade.

Brigades require adequate training, starting with short periods of discussion on various fire-prevention subjects. Usually only one or two subjects are discussed at each meeting. Frequently the discussion period, which is preferably attended by foremen and supervisors, is held immediately following fire drills. When starting to train the members of a fire brigade there are three things for the men to remember. These are:

(1) Use your head and do not get excited;



EMPLOYEE INSTRUCTION in use of special equipment for fighting fires in the Great Northern's Cascade tunnel. The men learn by putting out actual fires.



OIL FIRE being extinguished as part of instruction in use of tunnel fire-fighting equipment. Note special car in background. Dry chemical is used.

- (2) Know what you are doing and the reason for it; and
- (3) Do not worry about possible criticism after you have done your best in fighting a fire.

Further Training Steps

The ensuing steps in training fire brigades include explanation of the construction, operation and effect on fires of various types of portable equipment, the limitations of each type and how long it will operate, and the types suitable for Class "A," "B" or "C" fires. The use of extinguishers is then emphasized by having different employees operate the several types on actual fires to learn the proper methods of approaching the fire

and applying the extinguishing agent. Next should come a study of fire hose nozzles of different types and of all other equipment.

After thorough explanation of how and when to use straight streams, water-fog or foam, the regular drills are in order. The drills are usually started by the laying of hose lines inside and outside buildings and to roofs. After several trials with hose layouts a study of the handling of accessory equipment is desirable, such as the use of foam generators, pick-up foam nozzles, attaching and removing sections of hose and similar activities. The operation of each new appliance or method should be learned thoroughly before starting on the next so that eventually the

use of all equipment will become entirely familiar to brigade members. They should be required to drain and dry hose and return all equipment to its proper place in good working order after each drill. Reports are necessary showing the number of men and the equipment used at drills.

The training of night watchmen and patrolmen in the use of fire-protection equipment is particularly necessary. The watchmen should know where the fire alarm boxes are located and how to use them. They should be thoroughly instructed in the use of the different types of first-aid fire-protection equipment so that they may do everything possible to extinguish or control the fire before outside help arrives. The importance of first calling for outside assistance when a fire is discovered should be especially emphasized. The plant watchmen can do little more than call for help when a fire is discovered, but the promptness with which such help is secured largely governs the severity of a loss.

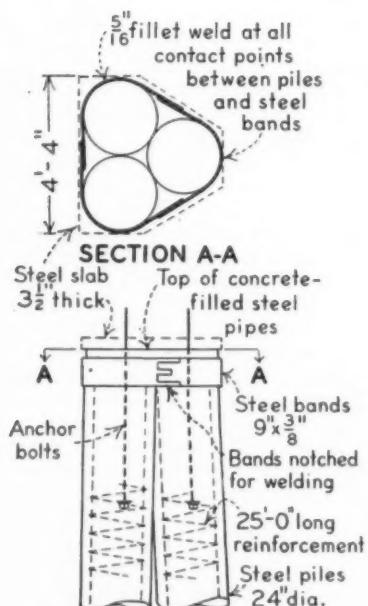
No two fires are exactly alike. Each fire involves combustible materials and has characteristics which may or may not be present in other fires in similar properties. There are, however, certain features of the elements of combustion that are common to many fires, and knowledge of these should be invaluable to those interested in prevention and extinguishment. Each type of fire requires suitable equipment and methods of extinguishment which it is necessary to emphasize in any comprehensive training program.

It is inconceivable that general fire-prevention supervisors can reach all employees who, through forethought and prior action, could prevent most fires from starting. Just a few words, however, from foremen and supervisors from time to time about the fire possibilities of a particular job will emphasize the hazards and direct attention to the probability of preventing serious fire losses. Such day-by-day instruction will supplement any overall fire prevention educational activity that may be instituted.

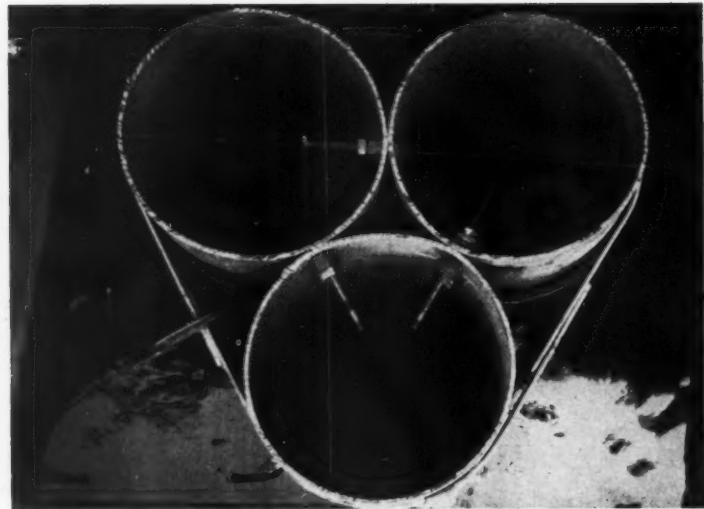
If it is to be successful, fire-prevention education, because of frequent changes in personnel, should be an extensive and continuing program. The time and expense devoted to such efforts will be more than repaid by the resulting preservation of property and the avoidance of interruptions in operations due to serious fires.

Banded Clusters of Pipe Piles . . .

Although hampered by river level and hundreds of train movements daily, the C&NW employed an unusual substructure design to replace approach spans of a swing bridge with minimum interruption to traffic. Spiral-welded foundation piles, driven in clusters by a barge-mounted pile driver and later filled with concrete, simplified renewal problem.



PILE CLUSTERS were tied permanently together by welding on steel bands.



STEEL PIPE PILES were driven in clusters of three on each side of the bridge. Additional length was obtained by butt welding pieces to lower section.

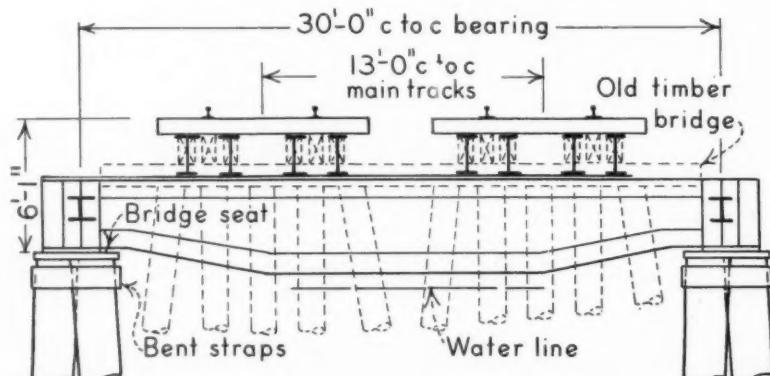
. . . Simplify Bridge

- The Chicago & North Western's bridge No. 1556 is located in downtown Milwaukee right between two switching yards. The bridge is a double-track structure which crosses the Milwaukee river and carries main-line traffic from Chicago to Milwaukee and to Minneapolis. The bridge consists of a 250-ft. swing span and until recently had timber-pile approaches, four spans at the east end and nine at the west. The swing span and its foundation are in good condition, but the wood piling of both approaches had "necked" at the waterline to the point where their renewal had become necessary.

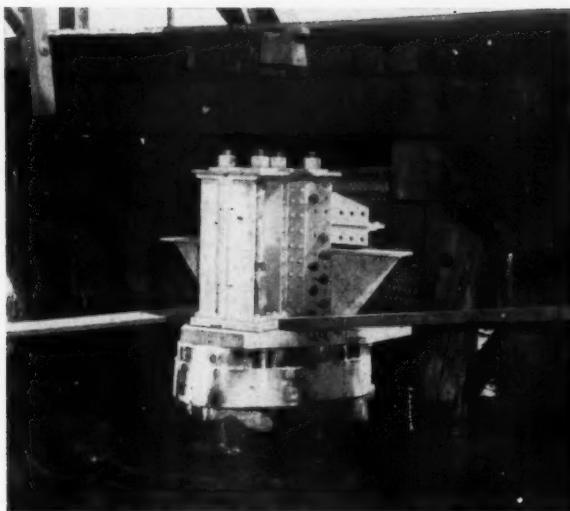
This posed a knotty reconstruction problem to the railroad. Traffic could not be rerouted around this

bridge because it was the sole link between the trackage east and west of the river. Also, piling could not be driven through the deck in the conventional manner because both tracks of the bridge are subject to hundreds of switching movements daily in addition to the over-the-road trains. Even if one track at a time could be spared for construction work, the pile driver would hamper switching movements on the other track because of fouling the clearance. In addition to the rail traffic over this structure, it is necessary to open the swing span several times a day for river traffic.

To meet these conditions, the road decided to drive piling in clusters of three on each side of the bridge with a barge-mounted pile



A STURDY PIER was produced by the concrete-filled pile clusters which were surrounded by a steel girder. The tracks were supported by I-beams.



CROSS GIRDERS were swung between each pair of pile clusters and set on steel slabs mounted on tops of piles.



STRUTS WERE BOLTED in place and other steel erection progressed despite close clearances with water and old bridge.

Replacement Job

driver, and to form piers by connecting the clusters on opposite sides of the structure with cross girders. Also, open-deck construction was decided upon, with the bridge ties supported by four wide-flange beams, 24 $\frac{1}{2}$ in. deep, under each track. In general, a span length of 24 ft. was adopted, with some variations being made in the lengths that were adjacent to the bridge ends and swing-span piers. This resulted in having two I-beam spans at the east end and five I-beam spans at the west end.

Records of the soil conditions that were previously encountered when driving the existing timber bridge were not too reliable, but the railroad had in its possession a soil-boring log made by the local gas company when it built a tunnel under the Milwaukee river, and this contained good data on the soil strata. From this log it was determined that the 40-ft. lengths of the timber piles previously used for the approaches would not be adequate for the new design, and that lengths from 70 to 80 ft. would be required. For this reason it was also decided to use 24-in. Armco spiral welded foundation pipe piles with a wall thickness of $\frac{1}{8}$ in. These were obtained in 40-ft. and 60-ft. lengths, with cast-steel driving points on the 60-ft. lengths. The 40 and 60-ft. lengths were later welded together.

The piles were driven on a batter of $\frac{1}{2}$ in. in 12 in. to produce a tripod at each cluster. They were driven

under contract by the Great Lakes Dredge & Dock Company from a floating barge having 100-ft. leads. A McKiernan-Terry double-acting steam hammer was used without any wood or rope cushion block over the tops of the piles. The energy of the blow developed was 16,700 ft.-lb., requiring a minimum of 17 blows per inch for the final penetration. The design load was 66 tons per pile.

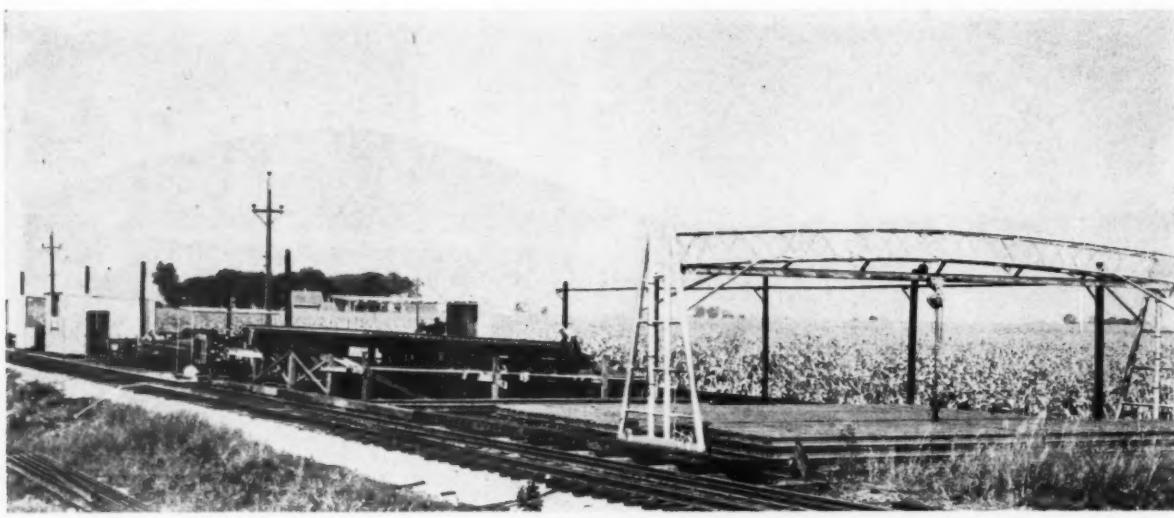
After a 60-ft. pile length had been driven to a sufficient depth, a 40-ft. length was fitted over it and joined by a field butt weld. The 40-ft. lengths had one end beveled at the mill for assisting in making good field welds, and this end was fitted over the top of a 60-ft. section. Half bands were bolted around the joints to hold the lengths in proper alignment while field welds were made through four 6-in. openings in the bands. When the welding had been completed at the four periphery points, the bands were removed and the welds completed around the entire joint. The tops of the piles were torch cut at 6 ft. 1 in. below the proposed base of rail.

When a cluster of piles had been driven, the three pile tubes were drawn and bolted together, after which three 9-in. by $\frac{1}{8}$ -in. steel straps, each reaching about one-third the distance around a cluster at a point 9 in. below the top, were welded to each other and the three piles to form a solid bearing. Pre-assembled cages of reinforcing steel

were inserted in the upper 25 ft. of each pile, after which the tubes were filled from tip to top at one pour with a Class A ready-mix concrete designed to develop a strength of 3,700 lb. in 28 days. The reinforcing steel was used to strengthen the piles above and below the water line in the event that the pipe tubes should gradually lose some section by corrosion. Anchor bolts for the cross girders were set in the tubes at the time of pouring the concrete.

Cross girders, which cleared the existing wood stringers of the timber approaches, were then set in place and braced with longitudinal struts. Meanwhile the wide-flange beams were pre-assembled in units for each rail span. At the completion of the cross-girder installations, one track was removed from service, the old wood floor, stringers and caps removed, the wood piling cut off, and the pre-assembled beam spans installed. After the beams for one track had been installed, similar work was progressed on the other track. The erection of the beams took each track out of service for five working days. This work was followed by the construction of reinforced concrete abutments, and the construction of walks and handrails along both sides.

The railroad is well satisfied with its new approaches and the knowledge that it has a sturdy structure with a promise of long service life. These approaches were built under the general direction of B. R. Meyers, chief engineer, and the design and erection was carried out under the supervision of A. R. Harris, engineer of bridges.

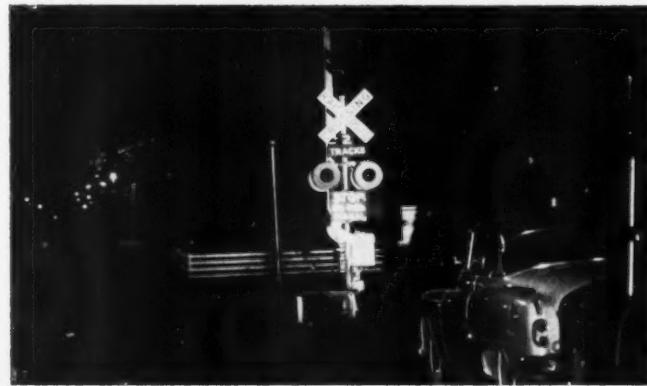


GANTRY CRANE (right), constructed from old boiler tubes, handled rail lengths from stockpile to skid serving saw in continuous welded rail setup on the Toledo, Peoria & Western where 4½ miles of track was recently laid with welded 115-lb. rail.

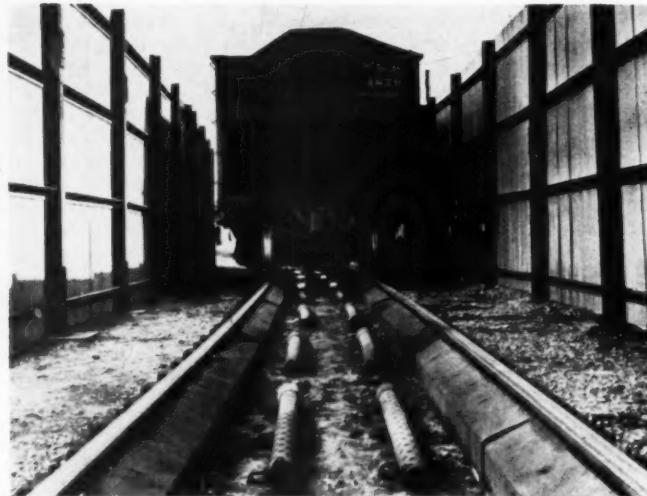
News Briefs in Pictures . . .



INCREASED CLEARANCES will result from powder charges placed in these holes being drilled by Canadian Pacific crew as road enlarges tunnels to provide extra space to accommodate spring action of "scenic dome" observation cars which the road expects to put into trans-continental service next year.



AN INJECTION MOLDED acrylic plastic reflective sheeting, called Reflexite, is shown here in a test installation on the Chicago, Rock Island & Pacific at Chicago. The crossing assembly, including the warning and multiple-track signs and the crossbuck, are covered with the new material.



JET HEATERS encased in short lengths of perforated wrought-iron pipe, 4 in. long, serve this new car-thawing device developed by engineers of the Norfolk & Western for thawing out frozen coal in open hoppers in cold weather. Corrosion-resistant wrought-iron pipe was specified in this instance because of its ability to withstand intense heat and exposure to atmosphere.

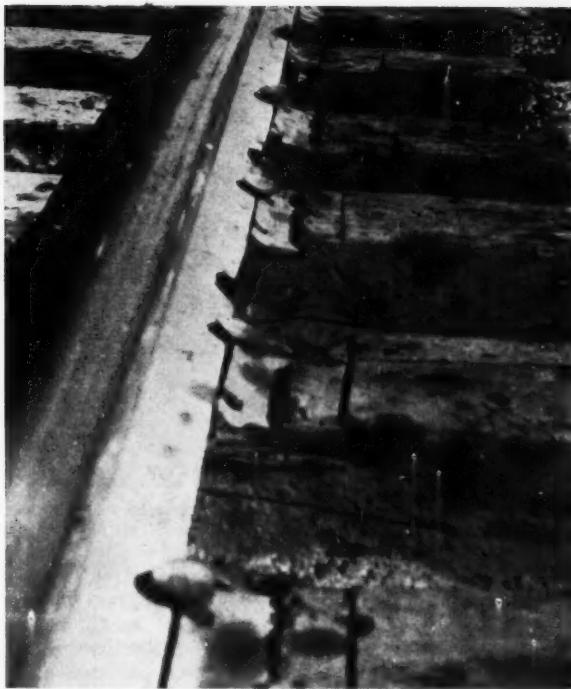


PLATE CUTTING accounts for a high percentage of failures in ties made of the softer woods. Other main causes are . . .



. . . SPLITTING and allied defects. All types of mechanical damage are now under heavy fire in attempts to defeat them.

What's Being Done Toward

Getting More Life from Ties . . .

... On the Santa Fe

"We figure that main-line—main-track ties going into track today have an average life in excess of 30 years," stated T. A. Blair, chief engineer system, Santa Fe, and L. C. Collister, superintendent of the Albuquerque (N.M.) treating plant of the Santa Fe, in an address giving the results of a three-year program on this road to determine by inspection the causes of failure of ties at the time they are removed. "This conclusion," they explained, "has been reached from a study of test sections of ties and is verified by the fact that our average main-line—main-track renewals for the past few years have been 112 ties per mile per year, giving an average life of 29 years." During the past 10 years the annual renewals have been 99 ties per mile, giving an average life of 33 years, they stated.

The study of the causes of failure of ties is being made in an effort to develop means of obtaining additional tie life. During the three-year period, 1950 through 1952, a total of 653,143 ties were inspected at the time of removal from track to determine the primary cause of failure. This represents an 18 per cent sampling of the 3,578,516 ties removed from all tracks. Actually, however, the ties inspected were practically all main-line—main-track ties of which the sampling represents 37 per cent of the total removed during the period. For each tie inspected information was recorded on the year of insertion, type of wood, kind of treatment, whether sawed or hewn and cause of failure.

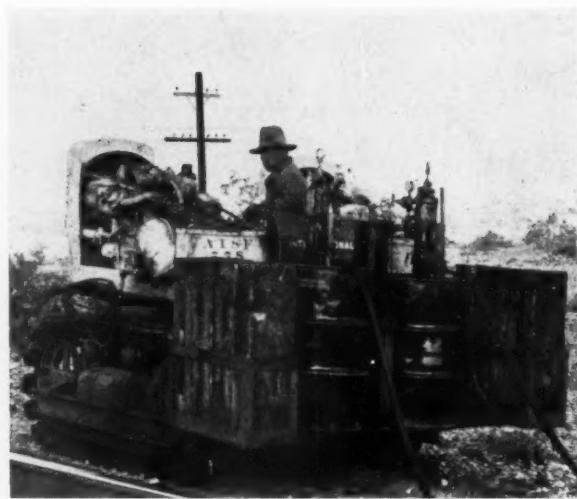
The address by Mr. Blair and Mr. Collister was de-

The program of the annual convention of the Railway Tie Association, held at Atlanta, Ga., October 14-16, included four addresses which told how the problem of how to make crossties last longer is being handled by the railroads, individually and collectively through the research staff of the AAR's Engineering Division. Abstracts of these addresses are presented here.

voted largely to a description of the findings of the tie inspection program and of the policies for prolonging tie life that have been put into effect as a result of them. Speaking of pine ties they stated that "plate cutting accounts for so high a percentage of failure in these ties (31 per cent for southern yellow pine and 39 per cent for western pine) that we are now, on all new rail relays, either anchoring the tie plates with Racor Studs or coating the tie-plate bed with Ankor-Seal made by the Ruberoid Company." The road is also carrying on investigations to reduce the failure of these ties due to splitting and shatter. When the investigation is completed the Santa Fe "will know definitely whether we should dowel or Vapor Dry those pine ties which were split during the seasoning period."



APPLYING "SMEAR" under tie plates on the Santa Fe. Plates are lifted to permit material to be pumped through spike holes.



CARRIER FOR SMEAR consists of crawler tractor on which drums and pumps are mounted. Material is known as Ankor-Seel.

Getting More Life From Ties . . .

The investigation, according to Messrs. Blair and Collister, indicated that 36 per cent of fir ties are removed because of plate cutting. Because of this high percentage a machine and supplemental equipment has been developed for raising tie plates in track and inserting Ankor-Seel compound under them.

Because 69 per cent of oak ties removed from track have failed because of splitting the road has increased the percentage of oak ties doweled and has installed Vapor Drying in a test cylinder at its Albuquerque treating plant. According to the speakers, the road has shown that, through increased penetration and retention under this process, it "can materially reduce the percentage of failure due to decay, as well as reducing the percentage of splitting."

Gum ties show a record of 26 per cent removed for decay and 56 per cent because of splitting. This experience has led the railroad to increase the doweling of gum ties to reduce splitting and to set up an incising machine at its treating plant at Somerville, Tex., for incising gum ties showing heartwood faces in an effort to get better penetration. In the meantime experience with its experimental Vapor-Drying cylinder indicates that this process is "as beneficial to the gum as to the oak."

The road has concluded that "if we can buy a good tie with improved handling and treatment methods and better protection in track we can expect to further extend tie life."

... On the Southern

"We know, or feel sure, that benefits are received from such processes as Vapor Drying, controlled air seasoning, incising, adzing, preboring, end-ironing, end-boring, and doweling," stated George H. Echols, chief engineer, Southern System, in an address entitled "Are Measures Now Being Used to Prolong the Life of Crossties Justified From an Economic Standpoint?" However, to measure the additional tie life received from one or more of these processes, he stated, "is quite difficult and subject to considerable variation in opinion."

Mr. Echols believes that the tie plate constitutes the

greatest single contribution toward prolonging the life of a tie. "We have made great progress," he continued "toward increasing the size of our tie plates in the last few years, but it is expensive and the cost should enter into any computation of economical tie use."

He then spoke of the tests that are being carried on with tie pads, tie-surfacing compounds and special hold-down fastenings. "Some pads," he said, "especially those which seal themselves to the ties, show great promise." Also, surfacing compounds can be applied which will stop or retard moisture from entering the tie on the exposed top surface. Mr. Echols believes that the use of special hold-down fastening has shown promise toward preventing mechanical wear between the tie and the tie plate, but said that test applications of some had been too recently installed to provide an answer, while others have already been abandoned as either being too costly or not effective. "We will, however, continue to experiment with tie pads, sealing compounds and special hold-down fastening in the hope that through these efforts we will arrive at an answer to the search for methods to prolong the life of ties beyond that which has already been achieved."

... On the B&O

The practice of the Baltimore & Ohio in using mixed hardwoods for crossties was the subject of an address prepared by C. B. Harveson, chief engineer maintenance of that road, which was read by J. T. Andrews, special engineer of the B&O. Mr. Harveson told of the measures taken on the B&O to obtain the maximum life expectancy from ties made of mixed hardwoods. "In recent years," he said, "a fairly uniform average for the mixed hardwood crossties has been maintained and at the present time we are buying approximately 25 per cent of our requirements in beech, hickory, gum, ash, birch, cherry and hard maple." Of these species, the greater proportion is in beech, hickory, hard maple and gum. Mr. Harveson explained that a service test of mixed hardwood ties, initiated in 1928 and terminated in 1952, showed that the average life obtained from the ties removed is as follows: White oak—20.8 years; red oak—20.2 years; and mixed hardwoods—21.8 years.

As a general rule the B&O has found that the mixed hardwoods, if properly seasoned and treated, have a



SPLITS IN TIES are being prevented by doweling. Here both ends of tie are being bored simultaneously to receive dowels.

life expectancy at least equal to the oaks, and that if their tendency to split is controlled they "may give even better results." This is particularly true of hickory which has shown itself capable of "very good service" as regards rail or tie-plate wear, especially on sharp curves. To obtain this end, however, close observation and care are required during the seasoning period, and a somewhat greater cost in application of anti-splitting devices.

Mr. Harveson explained that the present method of controlling split ties is by means of selective doweling. This involves machine doweling of all ties which have developed serious end splits during seasoning. Experience has shown that mixed oak ties show a much smaller proportion of serious seasoning splitting than the mixed hardwoods, the average for the former being 7 per cent and for the latter about 25 per cent. "The greatest offender in this classification is again the hickory of which about 90 per cent must be doweled." Concluding, Mr. Harveson said that the purchase and use of mixed hardwood ties enable the road to take advantage to the fullest extent of the available forest growth.

... And on the Research Front

A résumé of all the research work now underway to develop means of getting more life from crossties was given in an address by G. M. Magee, director of engineering research, Engineering Division, Association of American Railroads. In the absence of Mr. Magee his address was read by H. E. Durham, research engineer track of the Engineering Division. The work of the association along these lines, he said, has, in general, been divided into two phases. One of these is a joint cooperative research program with the National Lumber Manufacturers' Association, which is devoted primarily to discovering means of seasoning and treating ties to protect them against checking and splitting. The other phase consists of research projects which have been sponsored by the AREA Track committee for the purpose of reducing tie abrasion.

Speaking first of the research work with the NLMA, Mr. Magee told of efforts being made to develop a seasoning and treating process and of initial experience with it on the Santa Fe. In general, he explained, it seemed that the process "accomplished considerable towards retarding checking and splitting," but he went

About the RTA Meeting

The convention of the Railway Tie Association drew a total attendance of 475 persons, including 118 railroad men. The sessions were directed by president Harry Dunston, Southern Wood Preserving Company, Atlanta. Officers elected for the ensuing year are: President—J. E. Peterson, Gross & Janes Co., St. Louis; first vice-president—J. H. Tabb, J. H. Tabb & Co., Houston, Miss.; second vice-president—Douglas Grymes, Wood Preserving division, Koppers Company, Pittsburgh; members of the Executive Committee—Frank W. Campbell, Crane Lumber & Tie Co., Chicago; Edward F. Schlafly, Potosi Tie & Lumber Co., St. Louis; W. L. Winham, T. J. Moss Tie Company, St. Louis; and D. B. Frampton, Jr., D. B. Frampton & Co., Columbus, Ohio. The Executive Committee reelected Roy M. Edmonds as secretary and treasurer of the association.

It was decided to hold the 1954 meeting on October 20-22 at the Mayflower Hotel, Washington, D.C.

on to say that in its present stage of development the cost of treating ties by this process is uneconomical. "Another important question about this treatment is whether the strength of the wood has been seriously impaired by the elevated temperature used during treatment." Laboratory tests are now being conducted to determine the answer to this question.

Work with the NLMA also includes a project to test the efficiency of tie coatings as a means of preventing checking and splitting. "It has been definitely determined," he said, "that a good tie coating will maintain a more uniform moisture content in the top portion of the tie during the seasonal changes throughout the year." Some work has also been done to develop a satisfactory and economical laminated tie. However, "the cost of lamination is so much that ties cannot be produced by this process today in competition with sawn or hewn ties."

Mr. Magee said that, in a service test on the Louisville & Nashville, near London, Ky., "we have several different types of hold-down fastenings and tie pads under observation." The hold-down fastenings, he said, have generally effected a reduction in the rate of tie wear of about one-half compared to ordinary cut-spike construction, while most of the tie pads included in the tests have entirely eliminated tie wear in the relatively short service period to date.

Laboratory tests are also being conducted on hold-down fastenings and tie pads. In these tests, he said, it is apparent that certain types of tie pads will adhere to the tie and to the tie plate and effectively absorb the lateral motion so that none of this motion is transmitted to the tie. A further advantage of the tie pad, he continued, "is that if it is of a composition or if it is provided with an adequate sealing coating it will effectively prevent water from contacting the tie fibers directly under the tie plate. This is, of course, of great importance in preventing weakening of the fibers, water erosion and chemical attack." Both the service tests and the accelerated tests in the laboratory have indicated, said Mr. Magee, that a good design of tie-plate hold-down fastening will reduce the rate of tie-plate cutting by approximately one-half. Another advantage of the hold-down fastening, he said, is the added holding power which it gives to maintain gage. In his opinion there is a definite field for the use of hold-down fastenings and tie pads.



WHAT'S THE ANSWER?...

... a forum on track, bridge, building and water service problems

Department of "Floating" Laborers

When camp cars of a large extra gang, comprised of "floating" laborers, are set out near a town, is it necessary to issue any special instructions to the men or take any other steps to assure their proper deportment during non-working hours?

Renew Existing Rules

By N. W. KOPP

Division Engineer, Illinois Central,
Jackson, Tenn.

When camp cars of large extra or floating gangs are set out in or near a town, it should not be necessary to issue special instructions to the men of these gangs to assure proper deportment during non-working hours. Most railroads include deportment in the rule covering maintenance of way and structures, however, in order that proper deportment be secured it is occasionally necessary for the supervisor or division engineer, on his trips over the railroad, to contact these gangs personally to renew existing instructions and ask for compliance from the men involved.

Conditions covering deportment of the men will change from one location to another and it should be left to the discretion of the supervisor whether or not special instructions should be issued. It may at times be necessary to see that the cars are placed in locations where there is less likelihood of infraction of the deportment rule during non-working hours. Special cases will also arise where there may be men in the gang who are known to cause disturbances and these cases should be handled separately according to the existing rules on the various railroads.

After the supervisors and the division engineer have taken the necessary steps to see that the foreman and men are properly informed as to the rules covering deportment during non-working hours, it is well to have these rules brought to the attention of laborers in the gang periodically. It is suggested that they be issued in bulletin form every six months, merely as a means of reminding the men in the gang of the existing instructions.

The above views are not as comprehensive as they might be; however, we have had satisfactory cooperation from the employees locally. Therefore, I have not personally been confronted with the problem.

Provide Recreation

By JAMES R. CARDEN

Track Foreman, Southern Pacific,
Hazen, Nev.

Yes, instructions should be issued to men working on extra gangs prior to their moving near a town: (1) Be courteous; (2) if driving an automobile observe and obey all

traffic regulations and speed restrictions; and (3) avoid over-indulgence in intoxicating liquors, when visiting in the town.

I have found through experience that an extra-gang foreman plays an important part in the behavior of his men when they are visiting or shopping in town. However, a foreman cannot be held responsible for his men's actions or misbehavior off duty. Although it is possible, and should be a "must," for a gang foreman to pass special instructions to his men to help keep them from getting involved in trouble when the gang moves near a town, the most important factor is for him to persuade his men not to use intoxicating liquors too loosely. Often it is the foreman who sets the example and the men who work for him note this. The men will usually follow their foreman's habits.

It is my belief that a lot of our gang troubles would be solved if a recreation car were added to the gangs to help the men in occupying

Answers to the following questions are solicited from readers. They should be addressed to the What's the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least five (5) weeks in advance of the publication date (the first of the month) of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered In the March Issue

- Under what conditions would it be economically desirable to transport 39-ft. rails over highways? What equipment is suitable for this purpose? In the absence of a crane what means can be used for loading such rail on the highway equipment? Explain.
- When coaling stations and other servicing facilities are rendered obsolete by dieselization should they be dismantled or left intact? What are the advantages and disadvantages of these alternatives? Explain.
- To what extent is it practical and desirable to house maintenance-of-way employees in highway house-trailers or refitted bus-type vehicles? Is this equipment best adapted for housing any particular categories of employees? Explain.
- What safety precautions should be taken by workmen when removing forms from concrete? Explain.
- Under conditions where worn joint bars have resulted in rail-end droop, to what extent is it practicable to restore the rail surface, at the joint, by heat crowning the angle bars in track? How can this best be accomplished? Does this practice affect the strength of the joint bars? Explain.
- To what extent is it economical and practicable for water service forces to make repairs to various types of valves? Would it be more economical to replace the entire unit? Explain.

their free time. There should be books in English and Spanish, and cards and games of educational value. I believe a great deal of interest would be shown in the recreation car. This recreation would be something to look forward to at the end of each working day.

Contact Local Authorities

By GEORGE S. CRITES

Division Engineer (Retired), Baltimore & Ohio, Baltimore, Md.

There is little difference between locating a large extra gang, comprised of "floating" laborers, contiguous to a town, and moving a comparatively sized military command to the same location. Steps must be taken to avoid insofar as possible any conduct of members

of the gang disturbing the townspeople, and steps should also be taken to prevent any of the "sporting" element of the town, should there be such, from exploiting the "floaters."

If conditions warrant, authoritative members of the company police should contact the town authorities before the gang is moved to the town to learn the town's requirements for sanitation, rubbish disposal, policing and other such matters and arrange to have the local laws and customs complied with. It may be expedient to have a member of the company police deputized by the town to act for them with regard to the deportation of the "floaters" when they "hit" town.

The most trouble will be encountered at, and right after, pay days. If there is a "sporting" element in the town, it can be expect-

ed that they will set up for business close to the camp and entice, by fair means or foul, the "floaters" to part with their money. A little "rot-gut" and a few crooked games of chance, with a "soiled dove" or two thrown in, can start a riot.

It should be the duty of the deputized company policeman to see to the deportment of the company men at all times and especially upon occasions when the men might disturb the demeanor of the town or be subject to exploitation by the townspeople. This camp policeman should work with the town authorities to quell any such incipient disturbances.

If properly handled, there is no reason why the coming of a large extra gang into or near a town should not be an enjoyable occasion for the laborers and a paying proposition for the people of the town.

Keeping Farm Gates Closed

What steps should a section foreman take to see that farm gates on his section are kept closed?

Maintain Good Gates

By L. C. BLANCHARD

Roadmaster, Chicago, Milwaukee, St. Paul & Pacific, Minneapolis, Minn.

This question has been with us since the first right-of-way fence was built and will continue to be with us for years to come. Nevertheless, there are some things that can be done to minimize the trouble.

The most obvious is that a section foreman must maintain a well-constructed, easy-to-close gate. The ease with which gates can be closed is a contributing factor over which the section foreman has direct control.

Children often bring stock home from pasture and unless the gate is easily handled, it will be left open. Farmers, particularly renters, become disgusted with heavy, hard-to-handle gates, and leave them open. The owner of a farm will usually take some action to have the trouble remedied.

Where gates are frequently used by automotive equipment an effective device is used throughout most of the western states, known as a "car gate." This can be purchased commercially, or it can be constructed from materials available.

It is a simple bridge with an opening under it. The road surface is constructed of pipe or T-rails spaced far enough apart to be hazardous to stock and close enough for wheels to travel across it. A sloping wing gate made of boards forces the stock onto the pipes or rails, while leaving a permanent opening for automotive vehicles. These car gates work nicely where some means of drainage is required. In connection with these car gates it is necessary to install a regular farm gate adjacent to it for use of horses or other animals and farm machinery.

Foremen can do much by talking with their farm neighbors, asking for cooperation and inquiring what

the railroad might do to be helpful in keeping the gates closed. Foremen should assume that the farmer is as anxious to keep the gate closed as he is himself. A little discussion often reveals the problem and the solution.

Under no circumstances should a section foreman enter into a dispute or quarrel with a farmer about farm gates or any other matter. If he cannot handle the matter on a friendly basis with the farmer he should take it up with his supervisor who can assign someone to call on the farmer, who is trained in the matter of public relations and has authority to deal with the issue.

Track patrolmen should close gates every time they pass by an open one. Day-in-and-day-out persistence in this will many times cause the farmer to get into the habit of closing the gate, particularly when he realizes the railroad people are serious about wanting to keep the gates closed.

Sometimes, when a farmer is particularly difficult, he can be brought into line with a letter from the superintendent's office pointing out that continued negligence on his part will be used against him in the settlement of any claim that might result from it. Also point out that trains are sometimes derailed when running into animals on the track. If this has no effect, he might be further warned that a file is being built up against him that could involve him in a suit of criminal negligence should anyone be seri-



ously hurt or killed.

Claim agents can do much that is helpful by discussing this problem in their contacts with farmers. They might ask if the gate is in a satisfactory operating condition and, by a sympathetic approach, enlist the farmers support in a campaign to keep the gate or gates closed.

Everyone that operates a motor car on the railroad should wave a friendly greeting to farmers working in their fields adjacent to the tracks. It is amazing the amount of good will this simple act can generate and the beneficial results that can follow. Most farmers are willing to go half way or a little more, if we just act as though we appreciate it.

Summing up: Keep gates in good repair. Do whatever is necessary to make the gates handle easily. Close the gates every time you find them open. Ask the farmer for his cooperation. Treat him as a friend and a neighbor.

Nail 'Em Shut

By F. B. KELLY

Roadmaster, Minneapolis, St. Paul & Sault Ste. Marie, Dresser, Wis.

On my district, section crews do their own track patrol daily except weekends. If the foreman finds a gate open, he is to close it. If a foreman goes by an open gate and, seeing it, fails to close it, he is placing the railroad in a potentially liable position. Every farmer might once in a while leave a gate open and the foreman's closing it does not put a great deal of hardship on him. However, the farmer who persistently leaves his gate open is the one who causes the trouble.

If a foreman has a farmer of this type, he should talk to him and ask him to keep his gate closed. If the farmer is still lax, the foreman should nail the gate shut. If nailing is not practicable, he should fasten it in some other permanent way.

A note to the farmer asking him to keep his gate closed with a copy to the foreman's superior, will establish the fact that the foreman has contacted the farmer and has taken steps to clear himself and the company in case stock should be killed or injured due to failure of the farmer to keep the gate closed. After this has been done the foreman would be justified in not paying much attention to the gate in question because he has taken necessary steps to show that the farmer was not cooperating in the manner

he should. In a stubborn case the foreman might request help from the company's claim or legal department through his superior so that the question of liability could be definitely established.

A foreman should not be required to act as a watchdog on the farmer as there is a limit as to how far he has to go to protect himself and his company. It may seem a bit involved to have the foreman go so far as to write notes, etc., to the farmer but nothing is more embarrassing to a foreman than to have a lax farmer collect for an animal claim because the question boiled down to a matter of the farmer's word against that of the foreman.

In some cases, a farmer might leave a gate open for his convenience when not pasturing in that particular field. If this particular farmer is careful to keep his gate closed when stock is in the field, then I see no reason why a foreman should stop and close the gate, but where a farmer is careless about gates, then the foreman should stop and close the gates and take further steps, if necessary, to keep them closed whether the field is being pastured or not.

In talking to a farmer, a foreman should not argue, but should speak to him in a reasonable manner; if any law is to be laid down to the farmer, the matter should be handled by the claim or legal department.

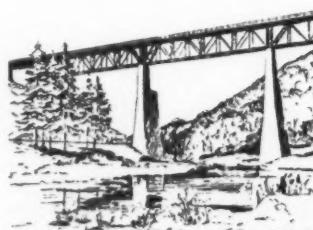
On my district, we do not have as much trouble with open gates as we do with stock breaking out through farmers' fences and getting onto the track at public crossings, where they may be hit or killed.

Use Diplomacy

By W. A. SCHUBERT

Division Engineer, St. Louis-San Francisco, Chaffee, Mo.

This is an important subject, and discloses the amount of good will and diplomacy a section foreman should show toward adjacent landowners.



It has been my experience that a foreman who gets along well with people living along his section derives the greatest benefit, and acts as "good will ambassador" for his railroad. He has no trouble getting farmers to close gates if he keeps the gates in good working condition by seeing that they are well maintained and easy to open and close. In this way, the farmer can open and close his gate without having to struggle with it, and can get over his crossing without difficulty. If the foreman follows such a practice and explains to the farmer the importance of keeping gates closed, the farmer will react favorably in most cases.

A good many times, outsiders using these gates leave them open against the will of the farmer. In such cases, we have suggested to the farmer that he keep his gates locked, and this has produced good results.

At no time should foreman get into arguments with farmers for leaving gates open. Foremen should close the gates each time they pass and find them open. Such a practice has its desired effect sooner or later.

Secure Cooperation

By B. F. McDERMOTT

Roadmaster, Chicago & North Western, Brookings, S. D.

Before anything is said about the manner in which a section foreman should keep gates on his section closed, allow me to point out that it is generally understood that the section foreman is responsible for the proper inspection of fences on his section and he must report to the roadmaster any destruction of fences by floods, fire or other means, making such temporary repairs as is possible, and endeavoring to keep stock from getting upon the right of way or tracks until permanent repairs can be made. He must endeavor to keep all gates closed, securing as far as possible the cooperation of the adjacent land owners in this effort.

As above stated, such is the section foreman's responsibility. However, in his efforts to secure the cooperation of farmers and ranchers adjacent to this railroad, he can either make it very easy to secure this cooperation or he can make it very disagreeable. It all centers around how much tact or diplomacy a foreman can use to secure this cooperation. But let us not for-

get that all section foremen are not diplomats and some farmers are difficult to cooperate with. Then again, if the foreman is a diplomat, he may have to apply his psychology under adverse conditions. During the past few years section limits have been lengthened and track forces reduced, making it very difficult, of course, to maintain right-of-way fences properly. This fact has, in many cases, not been taken too well by the farmers who own land adjacent to right of ways. When a right-of-way fence is in poor condition to the extent that it allows cattle and sheep to break through onto the track, there is no sense in having the section foreman ask the farmer to close his gates.

As above stated, this is a problem that requires considerable diplomacy on the part of the section foreman. Every section foreman could be considered "an ambassador of good will," not only to the patrons located at his headquarters but also to the many good people who own farms and ranches through which his railroad extends. A good foreman is aware of the fact that these farmers and ranchers are his friends and that they ship over his railroad. They too are his patrons and make his job necessary and his railroad prosperous. Every day on his inspection trips by motor car over his section he sees the farmer at work plowing his fields, planting his crops and grazing his

cattle and sheep and as he raises his hand in friendly greeting to be answered by a friendly wave from the farmer—he feels good in knowing that these people are his friends and neighbors.

When a section foreman has a farmer or rancher who is careless about closing his gates the situation can be handled in a manner such as this:

"Say Jim, that is a mighty fine herd of cattle you have and I know they are worth a lot of money and I don't know if you know this or not, but this morning, when I came along here on my motor car about forty-five minutes ahead of train 518, five of those nice cattle were up on the track. Guess that gate was not fastened very good. The boys and I herded them back in—and say, by the way Jim, I left about fifty of those old ties you wanted up at the next crossing. You can pick them up with your truck on your way home."

If the section foreman can stay on good terms with his neighboring farmers and ranchers, many times the farmers realize that the section foreman is doing everything possible to keep their fences in repair but, due to limited track force and adverse track conditions, he may be a little slow about it and the farmers many times will assist the foreman in repairing such fences. Many times the foreman can get the necessary fence material, take

it out to the location where the fence is in disrepair and the farmer sometimes installs the fence himself or assists the track forces with the installation. This, of course, does not happen often but it does happen. Many times such suggested actions on the part of the foreman will bring results, provided, of course, that the section foreman is really doing his best to cooperate with his farmer and rancher friends.

Speaking from past experience and from the very good results we are now obtaining on our subdivision, I would say that the pushing of a "good neighbor" policy by our entire organization is the solution to a lot of our trouble with right-of-way fences and the keeping of farm gates closed. During the past few years, on our subdivision alone, farmer and rancher friends, by their friendliness, their interest in our company, and by their alertness, have prevented several serious derailments by observing conditions on our railroad such as high water, washouts, fires on the right of way and at bridges, and by numerous other observations. These farmers have called in on their own telephones and have personally contacted our section foreman advising them of such dangerous conditions. This in itself is worth a great deal to a railroad company. Our rancher and farmer neighbors are real friends and we value their friendship very highly.

Movement of Expansion Bearings

What is the best means for maintaining the free movement of expansion bearings on steel bridges? Explain.

Maintain Cleanliness

By A. R. HARRIS

Engineer of Bridges, Chicago & North Western, Chicago

This question may be discussed from two standpoints: (1) Proper design, and (2) proper maintenance.

From a design standpoint, it must be remembered that the proper choice of materials for bearing surfaces is a problem of machine design. Furthermore, it must not be overlooked that end bearings of through spans are subject to transverse deformations resulting from floorbeam deflection, in addition to longitudinal movement.

Sliding bearing surfaces, including pins in rocker bearings, should consist of materials that will not seize. The poorest combination is

soft steel against soft steel. Cast iron makes a good bearing surface, but it is practically obsolete for end bearings. Pins of rocker bearings should be of hard steel with raceways lined with bronze. It would be well to consider making one of the plates of sliding bearings of bronze, and the other plate of medium (0.4 per cent) carbon steel.

Roller bearing plates should be designed with pressures low enough to prevent excessive deformation under the roller. It would be well to use bearing plates of higher carbon content to permit higher pressure.

From a maintenance standpoint, the first thing to consider is cleanliness. If the location is such that cinders, sand and debris cannot be kept from rapidly accumulating,

the bearings should be enclosed with a removable cover. Every three years, or more frequently if necessary, expansion bearings should be thoroughly cleaned and painted. It is doubtful if greases should be used as grease will tend to hold and accumulate dirt.

Use Rocker Type

By BRIDGE SUPERVISOR

There is little maintenance required in maintaining the free movement of expansion under a short light span that rests on a sliding sole plate. There is only a slight movement at such points and the impacts of traffic usually keep the bearing and sole plates from consolidation through corrosion.

For the longer and heavier spans it was the general practice for many years to carry the free ends of bridges on pedestal-type shoes which rested on a cluster of rollers.

The rollers were spaced and coupled together by side bars which made the bearing assemblies ideal receptacles for dirt, debris and moisture. It is difficult to clean such bearings; this must be done by rodding out the dirt and blowing, or both. Some locations are particularly troublesome in becoming fouled, particularly those at locations where the pier tops are lower than the normal level of the surrounding ground and where the wind can sweep in the fouling ma-

terials. Some relief from these objections is afforded by the newer design of roller assemblies which provide gears in the upper and lower roller-contact plates instead of the side bars.

The trend has been away from the roller and toward the rocker-type of bearings which rock back and forth on bearing plates. These rockers are very simple in construction and have few parts to get out of order. Also, there is less likelihood of dirt and debris becoming

lodged under the rockers. When particles do fall on the rocker plates, it is an easy matter to clean them if the wind does not do it first.

The rocker-type of bearing works better than the roller type and there is little maintenance involved other than pin wear. Today, I would venture to say that about 75 per cent of the railroads are now using the rocker-type of expansion bearing, although there are a few roads in the southern part of the country preferring to use the roller type.

Design of Ice-Storage Houses

What improvements have been made in the design of rooms or buildings for storing ice to be used on passenger trains? What modern materials are applicable in the construction of such facilities? Explain.

On the Way Out

By J. RICHARD KELAHAN

Technical Editor,
Industrial Refrigeration, Chicago

To the best of our knowledge, and consistent with information in our files, we cannot say that there have been any substantial improvements made in the structures or buildings used for storing ice along railroad right of ways. Ice for air-comfort systems on passenger trains has declined in use with the advent of more mechanically cooled cars.

Therefore, there has been no demand for any improvements in the structure of such facilities. The little ice that is needed is usually purchased locally or supplied at way points on the railroads from commercial ice houses established by refrigerator car operators or railway service concerns.

For the most part, ice storage houses existing today, even of fairly recent construction, are generally timber structures. Insulation in walls and ceilings has been of the loose-fill type and floor insulation

has been board-form types that will support considerable weight. On some buildings insulation has been placed over the roof rather than over a false ceiling. Also, in some rarer instances, minor improvements have been made in the cold storage doors.

As for modern materials applicable to such buildings, we do have information on one ice storage house of recent construction that utilized reinforced concrete. New types of insulation materials, for the most part, have not been applied to ice storage houses found along railroad right of ways because they are not quite as economical to obtain and install as the materials that have been traditionally used by these firms. Generally, the newer types of materials require a more prominent type of structure to retain them.

Justifying Use of Gage Rods

Under what conditions is the use of gage rods justified? What factors determine their spacing? Explain.

Use Often Justified

By GEORGE S. CRITES

Division Engineer (Retired), Baltimore & Ohio, Baltimore, Md.

Gage rods are justified wherever the lateral stresses of the rail might overcome the resistance of the fibers of the supporting ties. This will occur on soft ties, on very sharp curves and, at times, just ahead of the switch points of sharp turnouts.

Often, when a track which will ultimately be abandoned has to be kept in service (such as a mine line to workings which are about worked out), it is not economical to strengthen the track with good ties where rotten ones prevail. In such

cases, the judicious application of gage rods at points where the rails might spread will safely carry the track under slow speeds until the time of abandonment.

Unassisted ties of any caliber on sharp curves in congested industrial areas where maintenance conditions might not be the best may lead to spread track. When such tracks are originally constructed, consideration should be given to applying five or six gage rods per rail length on sharp curves and putting at least one gage rod in front of each switch. When old industrial tracks are repaired or reconstructed on the same alignment, they should have the same arrangement of gage rods.

It is to be recalled that good tracks cost about ten times what they did when many of the maintenance practices now used were established and also that derailments because of spread track, irrespective of where they happen, are costly and disrupt schedules as well as straining relations with shippers. Any sure and positive way to keep the two rails to gage should be adopted and, in the cases mentioned above, gage rods are the answer.

For Temporary Use Only

By C. A. SHANER

Supervisor, Reading, Reading, Pa.

The use of gage rods has, over a period of years, become abused. The purpose of a gage rod is solely
(Continued on page 1182)

Your BUDGET ALLOWANCE for 1954-

How much of it will go into

WEED CONTROL?

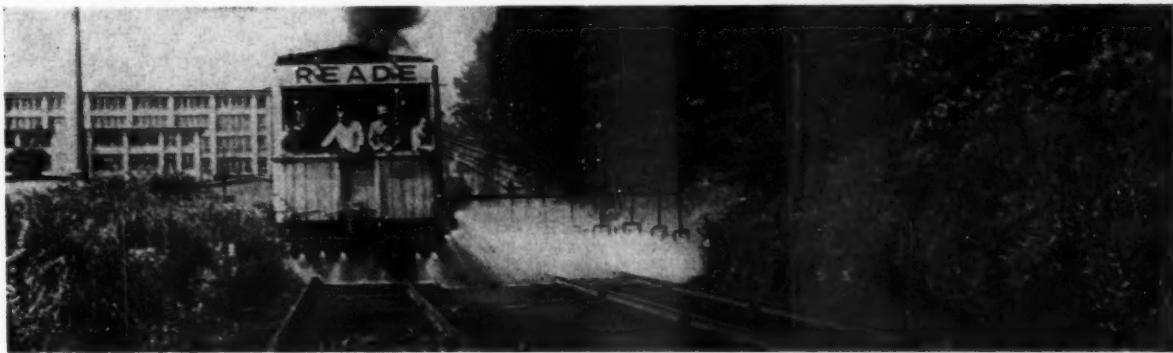
Has your work of 1952 and 1953 shown benefits that satisfy you? Figures, figures, figures; we may despise them, but they tell us where we are going.

So every executive today is something of a statistician.

Railroads using chemicals for control of vegetation should study them with care. Where several different types of products have been in use, comparisons are frequently revealing.

The Reade Manufacturing Company, with its long years of experience, is well equipped to interpret assembled figures (or set up new ones) on any vegetation control program.

We have in our files a wide assortment of figures assembled on weed control work. A comparison of our figures and yours may be of interest. We invite an exchange of information on this important part of your maintenance program.



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What's the Answer? (Cont'd)

to hold the track at gage *only until permanent repairs can be made.*

Gage rods should only be used to prevent "spread" track when the ties or timbers have become dry rotted to the extent that the holding power of the spikes is lost. The spacing of gage rods depends upon how many ties have become dry rotted. Gage rods placed at joints and centers will usually be sufficient to hold the track until new ties are installed. However, if the

curvature is sharper than 8 deg., gage rods should be installed at joints and quarters.

Do not make the mistake of putting only one gage rod at each joint, because the side of the joint where you place the gage rod has a tendency to pull inward, causing the formation of a lip on the head of the rail. Should a sharp flange strike this lip, the impact may be sufficient to cause a derailment. Always put two gage rods on at a joint—one on each end of the bars—and be sure that they are both uniform.

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BEALL Hi-Duty Spring Washers are made especially to stand the strain of the heavy-duty rail service required by today's high-speed freight and passenger trains.

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Spring Washer Specialists for 30 years

PRODUCTS OF MANUFACTURERS

New, improved equipment,
materials, devices



POWER WHEEL BARROW

KWIK-MIX Company, Port Washington, Wis., has announced the inclusion of a number of new safety and performance features in its Moto-Bug, a power wheel barrow which can be converted to a flatbed or fork-lift truck.

A new safety feature is the "dead man" internal expanding brake system which instantly stops all machine movement when the operator's foot is off the treadle. This automatic feature affords protection against operator carelessness and unforeseen accident. The brakes are adjustable.

The power transmission has been improved by use of a cog-type V-belt between the 6-hp. gasoline engine and the drive wheels. Inspection of the V-belt and engine parts has been facilitated by introduction of a good sized inspection door in the front panel of the cowl. The rear of the engine is open to permit ready inspection from that side.

A vertical clutch control lever with neutral forward and reverse positions has been provided. This lever is set so that it is easily at hand for the operator. The steering gear has been placed 3 ft. 6 in. above the riding platform for greater operator convenience and less work fatigue. Bronze plates have been installed in the clutch assembly to provide smoother starts and longer clutch life.

All hopper and flatbed platform models have been provided with a

(Continued on page 1185)

ADDITIONAL INFORMATION

On Any of the Products Mentioned in This Issue

The following compilation lists all products mentioned in the advertising and editorial pages of this issue. If you desire additional information on any product shown, use one of the addressed postage paid cards to request it. Write in the product and page number in each case. The information will come to you, without obligation, directly from the manufacturer.

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RAILWAY TRACK AND STRUCTURES

December, 1953

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single cast body latch hook complete with adjusting spring which replaces the two hook latches previously used.

The double wheels on the drive axle of the fork-lift model are now cast in one piece and separate tires are provided for each wheel for easy inspection and changing. A built-in electric starter is optional equipment.

CORROSION PROTECTION OF RAIL JOINTS

BROOKS Oil Company, Pittsburgh, Pa., is introducing a product known as Barcote No. 600 for use in the lubrication and corrosion protection of rail joints. Excellent results are also claimed from use of the product as a coating for rails in tunnels or those subject to excessive brine drippings from refrigerator cars, and as a protective coating for bridges subject to salt water spray from coastal locations.

Barcote No. 600 is a solvent cut-back leaded compound product with a pour point of 0 deg. F. Coverage leaves a thin film which sets up to a semi-hard coating of pure lubricant with adhesion and penetration to all metals. It is reported that in a 4-gram test on a Timken machine the resultant film will carry 43 lb. lever arm load for 30 min. and that this is indicative of the enduring nature of the film.

It is claimed that the material has the following characteristics: Free flow into tank or container at 0 deg. F.; filterability through 0.005-in. mesh; penetrating action behind scale and through rust; solubility in petroleum solvents; will not emulsify in water; will not clog spray equipment; does not separate in storage; is not corrosive and prevents corrosion; has strong affinity for metal; leaves a lasting film; provides physical and chemical protection; and never dries hard.

It is further claimed that as a wire rope lubricant in field or maintenance service, it is easy to apply under all temperature conditions, that its quick drying action prevents dripping, that the resultant high-film strength lubricant provides protection against wear and corrosion; and that the thin dry film permits only a negligible adhesion of scale, dust, dirt and other contaminating abrasive substances.



LARGER COMPRESSOR FOR ON-TRACK TAMPER

RAILWAY Maintenance Corporation, Pittsburgh, Pa., has announced that its McWilliams Multiple Tool Air Tamper is now available equipped with a 600 cu. ft. air compressor. It is claimed that the additional air capacity will increase the tamping rate approximately 40 per cent over a machine equipped with a 315-cu. ft. compressor.

It is said that, during a five-day period of operation, with a heavy maintenance gang, making a 4 to 5-in. lift, using 2½-in. stone ballast on track with 24 ties per rail panel,

this machine averaged 585 ft. per hour with a maximum production rate of 620 ft. per hour. It was further stated that during this operation the tamper was operated to secure a maximum compaction under the ties regardless of the number of insertions required. This averaged 3 to 4 insertions per tie with a maximum of 5 insertions. At locations where 5 insertions were required, an operating rate of 550 to 560 ft. per hour was maintained.

All new ties were spiked behind the tamper and it is claimed that all ties were tight against the rail when spiked and were still tight on inspection after a week of traffic.



TORQUE CONVERTER IMPROVES PERFORMANCE

THE MODEL HM Payloader Tractor-Shovel manufactured by the Frank G. Hough Company, Libertyville, Ill., has been considerably improved by the addition of a hydraulic torque converter according to an announcement by the manufacturer. The announcement also states that the improvement

has also been incorporated in the gas and diesel-engine models of the TM Payloader tractor for heavy duty switching and towing operations.

The converter, of a three-element type, multiplies the torque output of the engine in direct proportion to the load requirements. It is stated that, in conjunction with a four-speed, full reversing transmission,

(Please turn the page)

New Products (Cont'd)

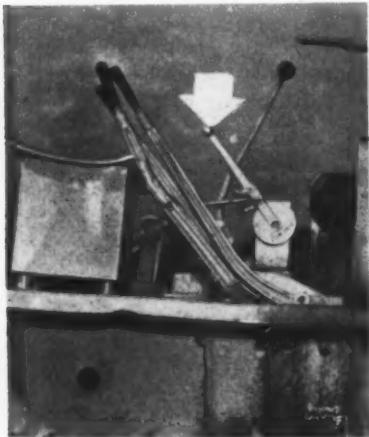
the converter provides a much smoother tractor-shovel drive than has previously been available.

It is claimed the torque converter greatly reduces the amount of clutching and gear-shifting required and thereby reduces the amount of effort and concentration previously required of the driver. The drive acts as a cushion for the entire power train, protecting these components against load shocks, reducing maintenance and prolonging the life of the unit.

THROTTLE CONTROL

THE LINK-BELT Speeder Corporation, Cedar Rapids, Iowa, has announced the development of a new positive-action, friction-type throttle control designed to improve the performance of gasoline or diesel-powered equipment.

It is claimed that this new throttle control provides an infinite range of engine speeds and that it



can be used on shovels and all other construction machinery, crushers and drilling rigs, and similar equipment. It is said that the throttle control, once set, holds the engine speed constant despite vibrations which might be encountered. The control is easily mounted in the field, and no adjustment is necessary to compensate for engine size or type.

It is further stated that increase or decrease of engine speed with this new throttle control is fast and positive, and requires little effort. The control will stay put in any position, with any governor pull up to 75 lbs. The elimination of ratchets and pawls, plus a negligible

number of moving parts, keeps wear to an absolute minimum. Moving parts on the new control are either aluminum or cadmium plated to resist rust.

The new Link-Belt Speeder throttle control mounts any place a governor cable can be attached. Installations on old and new equipment, of all types and manufacture, are being made by the distributors of Link-Belt Speeder power cranes and shovels.

WELDING ELECTRODE

THE LINCOLN Electric Company, Cleveland, Ohio, has recently announced a new electrode called Jetweld, which incorporates powdered metal in the electrode coating. It is claimed that this is a new approach to electrode design and that the new type of coating uses the heat of the arc more efficiently. It is said that this electrode achieves the fastest hand welding speed ever accomplished, with high standards of weld quality, appearance, and ease of operation.

Jetweld is a heavily coated shielded-arc type of electrode for operation in flat or near-flat positions with a-c or d-c welding current. It meets the physical requirements of Class E-7016 electrodes and is used on work formerly calling for E-6012 and E-6020 electrodes on single pass or multiple-pass welds. It is said to be especially well suited for horizontal and flat-position fillets, horizontal and flat-position laps, single and multiple pass butts, and deep grooves and corners. It is also suited for welding, without cracking and without surface holes, some higher carbon steels. Weld metal is said to be uniform X-ray quality, free from undercut with superior impact values at low temperatures.

Typical physical properties, as welded, are: tensile strength, 93,000 psi.; yield point 79,000 psi.; and elongation in 2 in., 15 to 22 per cent. Typical Charpy keyhole impact value at room temperature is 28 ft.-lb. and at -70 deg. it is 20 ft-lb.

It is claimed that typical welding speeds in lap and fillet work are on the order of 12 to 15 in. per min. The bead appearance is smooth, comparable to that normally associated with automatic hidden arc-welding. The slag produced is said to curl off as it cools, making the welds practically self-cleaning. It has a smooth, stable arc action which is said to be highly resistant to arc blow. It is a "drag" electrode

which is operated with the coating touching the work, making for ease of operation, simplifying tack welding and operator training. The elimination of coating breakdown permits using the entire coated portion of the electrode, reducing stub loss to a minimum.

Jetweld is available in 5/32-in., 3/16-in., and 1/4-in. sizes.

PAINT CAN GUN

ALTHOUGH developed primarily for marking trees by foresters, Nelson Company, Iron Mountain, Mich. has marketed a paint-can-gun which is believed to have useful application in railroad service for marking ties (both in and out of the track), lumber, and metal where crayon or paint is employed for marking, grading, or establishing sight points.



The paint comes in a quart-size can having a threaded top on which the gun is screwed. The paint is of special formula which is said to prevent it from settling, thickening, or skinning over, thus saving the stirring, thinning, or straining that otherwise would be necessary. It is also said to be highly durable and visible, is not absorbed by wood or bark, and is available with bright pigments of yellow, red, blue, white and orange.



THE MONTH'S NEWS...

. . . among railway men—the associations—the suppliers

Changes in Railway Personnel

General

W. J. Eyer, assistant roadmaster on the Northern Pacific at Fargo, N. D., has been promoted to trainmaster at Dickinson, N. D., succeeding **D. H. King**.

Walter R. Weaver, acting chief engineer of the Pittsburgh & Shawmut at Kittanning, Pa., has assumed the additional duties of superintendent of motive power and equipment with offices at Brookville, Pa., to succeed **E. L. Frazier**, retired.

Theodore M. von Sprecken, Jr., track supervisor on the Southern at New Albany, Ind., has been advanced to assistant trainmaster at Anniston, Ala.

Engineering

M. Swinger, valuation engineer on the Delaware, Lackawanna & Western at Hoboken, N. J., has retired after more than 46 years of service.

A. N. Page, supervisor of bridges and buildings on the Erie division of the New York Central at Erie, Pa., has been promoted to engineer of buildings at Cleveland, Ohio.

Charles D. Prentice, who was recently appointed engineer of track of the Maine Central at Portland, Me. (RT&S, November, p. 1104), is a graduate of Yale uni-

years had been division engineer in charge of road between New Haven, Conn., and New York.

B. L. Ambargey, rodman on the Chesapeake & Ohio at Columbus, Ohio, has been promoted to assistant cost engineer at Hinton, W. Va., succeeding **J. S. Ellis**, who has been transferred to Marion, Ohio.

James Carey, supervisor of track on the New York Central at Ashtabula, Ohio, has been promoted to assistant division engineer of the Ohio Central division at Columbus, Ohio, succeeding **R. W. Orr**, who has been transferred.

James O. Born, whose appointment as engineer of structures on the Maine Central at Portland, Me., was recently announced (RT&S, November, p. 1104), was graduated from Colorado A. & M. college in 1944, following which he went

after having served with various other railroads, the government, and his own construction firm.

Mr. O'Leary served the SP in the Southwest in various engineering positions until 1911 when he was named field engineer at San Francisco. He was named assistant valuation engineer in 1928.

Alfred C. Johnson, whose promotion to assistant chief engineer of the Elgin, Joliet & Eastern at Joliet, Ill., was recently announced (RT&S, October, p. 1008), was born at Geneva, Ill., June 1, 1905. Upon graduation from the college



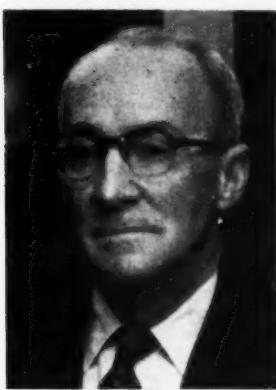
Alfred C. Johnson

of architectural engineering of the University of Illinois in 1929, he entered the service of the EJ&E as a draftsman. He was promoted to bridge inspector December 1, 1943, and on October 1, 1944, was named assistant superintendent in the bridge and building department. On March 24, 1947, Mr. Johnson was promoted to chief draftsman, and on November 1 of that year was named engineer of design, which position he held until September 1, 1950, when he was named engineer of bridges and buildings. He was reappointed engineer of design on July 1, 1952, the position he held at the time of his recent promotion.

Thomas D. Kern, whose promotion to assistant to the division engineer on the Illinois Central at Vicksburg, Miss., was recently announced (RT&S, November, p. 1103), was born March 16, 1920, at Mounds, Ill. He entered the service of the IC on June 5, 1940, as an engineering apprentice at Paducah, Ky., and subsequently served as chairman and rodman at that location until March 1944 when he entered military service. After graduating from the University of Virginia, he re-entered IC service in September



James O. Born



Charles D. Prentice

versity and has worked on various engineering positions on the New York, New Haven & Hartford for over 30 years, including assistant division engineer, office assistant engineer to engineer maintenance of way, and for the past seven

into service with a Navy construction battalion. On his return from military service, he was employed by a firm of consulting engineers at Denver, Colo., as a structural designer. For the past 4½ years he had been connected with the Denver & Rio Grande Western at Denver, starting as assistant supervisor of structures and later being promoted to supervisor of structures, the position he held until his recent appointment on the MC.

E. C. Kinnear, assistant engineer in the valuation department of the Southern Pacific at San Francisco, has been promoted to assistant valuation engineer succeeding **W. J. O'Leary**, who has retired after 53 years of service.

Mr. Kinnear joined the SP in 1929

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UNION PACIFIC

Tunnel, Portland, Oregon

PENNSYLVANIA

Scales, Altoona, Pa.

SEABOARD AIR LINE

Crossing, Richmond, Va.

FRISCO

Crossing, Vernon, Texas

GREAT NORTHERN

Tunnel, Seattle, Wash.

RF&P

Main Line, Fredericksburg, Va.

DENVER RIO GRANDE

Tunnel, Burnham, Colo.

ALIQUIPPA & SOUTHERN

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1949, as an instrumentman at Paducah. In January 1950 he was transferred to Waterloo, Iowa, and in August of that year was promoted to assistant supervisor of track at Fort Dodge, Iowa. In February 1951 he was promoted to supervisor of track at Mendenhall, Miss., and in August 1953 was transferred to Monroe, La.—the position he held at the time of his recent promotion.

Paul R. Gibson, whose promotion to principal assistant engineer on the Northern Pacific at St. Paul, Minn., was recently announced (RT&S, October, p.



Paul R. Gibson

1006), was born at St. Paul, February 5, 1892. He entered the service of the NP in 1910 and served as rodman, chainman and instrumentman until 1917 when he was named assistant engineer. After serving as resident engineer, construction, he was named roadmaster in 1934. Mr. Gibson was serving as division roadmaster when he was named assistant to the general manager in 1945—the position he held prior to his recent promotion.

R. R. Gunderson, assistant bridge engineer on the Southern at Washington, D. C., has been appointed bridge and structural engineer, system, on the Western Maryland, with headquarters at Baltimore, Md.

C. A. Stokes, field engineer in the service engineering division of the General Electric Company at Baltimore, Md., has been appointed electrical engineer, maintenance of way and structures, on the Western Maryland with headquarters at Baltimore.

Blair Blowers, chief engineer maintenance of way of the Erie, with headquarters at Cleveland, has been promoted to chief engineer with jurisdiction over both



the engineering and maintenance of way department. His appointment follows the retirement of Irwin H. Schram (RT&S, November, p. 1105). Howard M. Shepard, assistant to chief engineer at Cleveland, has been appointed assistant chief engineer—engineering, the position of assistant to chief engineer having been abolished. Lawrence H. Jentoft, division engineer on the Delaware, Susquehanna and Tioga divisions at Hornell, N. Y., has been promoted to assistant to chief engineer—maintenance of way, at Cleveland. Wesley F. Petteys, division engineer on the Mahoning division at Youngstown, Ohio, has been transferred to Hornell to succeed Mr. Jentoft. Raymond J. Pierce, division engineer on the Kent division at Marion, Ohio, has succeeded Mr. Petteys at Youngstown. James P. Morrissey, division engineer on the Marion division at Huntington, Ind., has replaced Mr. Pierce at Marion. Mr. Morrissey has been succeeded at Huntington by Ronald H. Jordan, division engineer on the Buffalo and Rochester divisions at Buffalo, N. Y., who, in turn, has been replaced by Walton E. Smith, trainmaster at Jersey City, N. J.

Mr. Blowers was born at Troupsburg, N. Y., on April 28, 1893, and was graduated from Columbia University with a B.S. degree in civil engineering in 1913. He began his railroad career as a rodman on the Erie at Hornell in 1912, becoming assistant estimator in 1913 and head of the engineering corps in 1917.



Blair Blowers

Following service in the U. S. Army from 1917 to 1919, he returned to the railroad in his former post. Later in 1919 he was advanced to general yard foreman and then became track supervisor in 1920, assistant engineer in 1922, and assistant division engineer at Dunmore, Pa., in 1925. He served as division engineer at Jersey City and Hornell from 1927 until 1942, when he was named acting engineer maintenance of way, Western district, at Youngstown. He became engineer maintenance of way of the Western district in 1944, and on July 1, 1946, was promoted to chief engineer maintenance of way (system) at Cleveland—the position he held at the time of his recent promotion.

(Please turn to page 1190)

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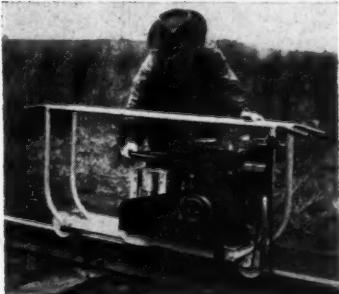


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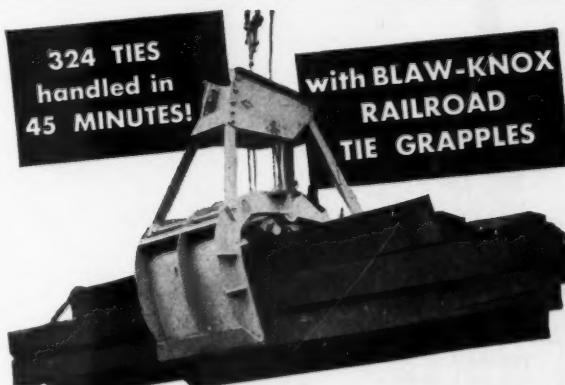
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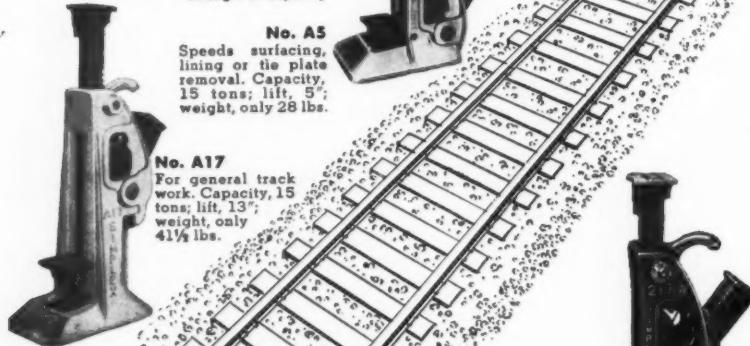
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Railway Personnel (Cont'd)

Track

Lester I. Kemp has been appointed assistant supervisor on the Southern at Huntington, Ind.

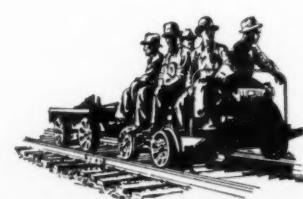
C. E. Whitmore, Jr. has been appointed supervisor on District 1 of the Richmond, Fredericksburg & Potomac at Richmond, Va., and **T. DeW. Styles** has been named assistant supervisor, also at Richmond.

J. J. Kendrick, assistant roadmaster on the Radford division of the Norfolk & Western, has been transferred to the Pocahontas division at Bluefield, W. Va., to succeed **W. B. Hosp**, who, as announced elsewhere in these columns, has been appointed assistant supervisor of bridges and buildings on the Shenandoah division.

Ben Lee, division roadmaster on the Northern Pacific at Billings, Mont., has retired after 44 years of service, and the Billings Division roadmaster position has been abolished. **B. I. Overlie**, division roadmaster at Glendive, Mont., has been appointed division roadmaster of the Yellowstone division, and **W. J. Condotta**, assistant roadmaster at Glendive, has been named assistant division roadmaster.

E. M. Bissinger, assistant supervisor of track on the Eastern division of the Pennsylvania at Mansfield, Ohio, has been promoted to supervisor of track on the Panhandle division at Carnegie, Pa., to succeed **E. S. Bell, Jr.**, who has transferred to the Susquehanna division at Northumberland, Pa. **W. J. Baetz**, assistant supervisor of track on the Maryland division at York, Pa., has been transferred to Mansfield, and **H. R. Davis**, junior engineer—track on the Maryland division at Washington, D. C., has been promoted to replace Mr. Baetz at York.

Robert W. Fondren, who was recently promoted to supervisor of track on the Southern at Keysville, Va. (RT&S, November, p. 1106), was born at Lynchburg, Va., on December 3, 1924, and began his railroad career with the Southern in July 1950 as a roadway apprentice. Following service as a rodman in the office of the chief engineer maintenance of way and structures and as a student apprentice at Charlotte, N. C., Mr. Fondren was advanced to assistant supervisor of track at that location in January 1952—



the position he held at the time of his recent promotion.

Paul H. Croft, Jr., whose promotion to supervisor of track on the Illinois Central at Tutwiler, Miss., was recently announced (RT&S, November, p. 1105), was born September 15, 1927, at Christopher, Ill., and was graduated from the University of Illinois in 1951. He entered the service of the IC in May 1943 as an engineering apprentice, and from June 28, 1944, until February 4, 1945, he worked as a chainman in the engineering department at Chicago. After serving with the Army Engineers he returned to the IC on August 27, 1947, and served as a rodman at Chicago, Champaign, Ill., and Memphis, Tenn., until January 1, 1952, when he was promoted to assistant supervisor of track at Carbondale, Ill.—the position he held at the time of his recent promotion.

Special

The following appointments have been made in the work-equipment supervisory organization of the Southern:

Robert A. Williams to general supervisor, work equipment, at Charlotte, N. C. He was formerly supervisor, work equipment, at the same point.

Walter F. Kohl to general supervisor, work equipment, at Knoxville, Tenn. He was formerly supervisor, work equipment, at that point.

Haynie H. Hornbuckle to general supervisor, work equipment, at Birmingham, Ala. Mr. Hornbuckle was formerly supervisor, work equipment, at Cincinnati, Ohio.

Vaughn W. Oswalt to assistant to superintendent, maintenance equipment, at Charlotte. He had been serving since 1946 as assistant superintendent scales and work equipment at Washington, D. C.

Daniel J. Rogers, Jr., to supervisor, work equipment, at Greensboro, N. C.

William R. Jacobs to supervisor, work equipment, at Knoxville.

Dexter W. Kiser to supervisor, work equipment, at Lexington, Ky.

Van R. Newell to supervisor, work equipment, at Atlanta, Ga.

James E. Cain to supervisor, work equipment, at Birmingham, Ala.

Harold M. Jessen to supervisor, work equipment, at Greenville, S. C.

Mr. Williams was born at Dacusville, S. C., on January 12, 1911, and entered the service of the Southern as a rodman in the office of the chief engineer maintenance of way and structures in November 1945. He was promoted to transitman in February, 1946. Since September of that year he had served as supervisor, work equipment, at Charlotte.

Mr. Kohl was born on January 16, 1908, at Middletown, Del. He entered the service of the Southern in August 1942 and served as supervisor, work equipment, until his recent promotion.

Mr. Hornbuckle was born at Winston, Ga., on April 11, 1911, and went with the Southern as a machinist apprentice in April 1927. After serving as machinist and as pump repairer he became supervisor, work equipment, at Cincinnati in February 1946.

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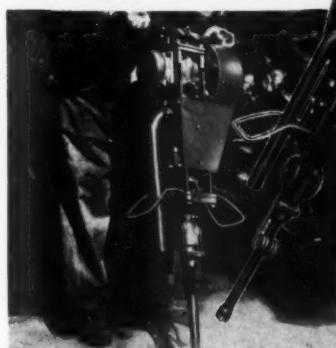


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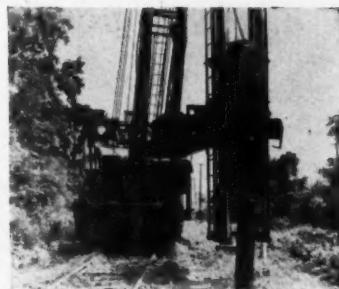
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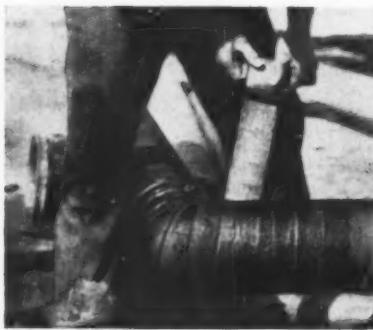
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Railway Personnel (Cont'd)

Mr. Oswalt is a native of Wabash, Ind., where he was born on January 7, 1898. Beginning his service with Southern in April 1942, as supervisor work equipment, at Cincinnati, he became assistant superintendent of scales at Washington in February 1946.

Bridge and Building

W. B. Hosp, assistant roadmaster on the Pocahontas division of the Norfolk & Western at Bluefield, W. Va., has been promoted to assistant supervisor of bridges and buildings on the Shenandoah division.

L. B. Coale, supervisor of bridges and buildings on the New York Central at Springfield, Ohio, has been transferred to the Erie division at Erie, Pa., succeeding **A. N. Page**, whose promotion to engineer of buildings at Cleveland is noted elsewhere in these columns.

W. R. Arniel, junior engineer—structures on the Philadelphia division of the Pennsylvania at Harrisburg, Pa., has been promoted to assistant supervisor of structures on the Eastern division at Pittsburgh, Pa., to replace **D. C. Fisk**, who has been transferred to the Panhandle division.

H. R. Demmon, assistant general bridge inspector on the Southern Pacific at San Francisco, has been promoted to general bridge inspector following the retirement of **D. T. Rintoul**, who left the company after 51 years of service.

Mr. Demmon joined the SP in 1913 in the maintenance-of-way department at Portland, Ore., and served there as assistant bridge and building supervisor prior to his appointment as assistant general bridge inspector at San Francisco.

Obituary

William F. Dunn, Sr., tie and timber agent of the Southern, with headquarters at Washington, D. C., died on October 7.

Randall F. Holden, engineer maintenance of way of the Carolina & Northwestern (subsidiary line of the Southern) at Charlotte, N. C., died on November 4 at the age of 60 while on a business trip in Greenville, S. C.

Mr. Holden, a native of Washington, D. C., was born June 21, 1893. He received his civil engineering degree from Lafayette College and entered the service of the Southern's engineering department in 1916. In 1920 he was appointed assistant engineer at Washington, serving later as assistant track supervisor. In August 1934 he was appointed engineer maintenance of way of the C&N, and was transferred in that capacity to Charlotte in 1946.

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Because of the importance of the above message, this space is contributed by
(Railway Track and Structures)

Association News

Metropolitan Maintenance of Way Club

The usual luncheon meeting of the club, preceding the annual dinner of the New York Railroad Club, will be held at the Hotel Shelburne, New York, on Thursday, December 10. The program for the meeting had not been completed at the time this issue went to press.

Northwest Maintenance of Way Club

The next meeting of the club will be held on December 17 at the Midway Civic Club rooms, 1931 University Avenue, St. Paul, Minn., at 6:30 p.m. The principal speaker will be Morris A. Bradley, director of public relations, M. A. Hanna Co., Cleveland, who will
(Continued on page 1194)

Meetings and Conventions

American Railway Bridge and Building Association—Annual meeting, September 13-15, 1954, Conrad Hilton Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

American Railway Engineering Association—Annual Meeting, March 16-18, 1954, Palmer House, Chicago. Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5.

American Wood-Preservers' Association—W. A. Penrose, Secretary-treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

Bridge and Building Supply Association—L. R. Gurley, Secretary, 201 North Wells street, Chicago 6.

Maintenance of Way Club of Chicago—Next meeting December 14, E. C. Patterson, secretary-treasurer, Room 1512, 400 W. Madison street, Chicago 6.

Metropolitan Maintenance of Way Club—Secretary, 30 Church street, New York.

Mississippi Valley Maintenance of Way Club—P. E. Odom, Secretary-Treasurer, Room 1008, Frisco Building, 906 Olive street, St. Louis 1, Mo.

National Railway Appliances Association—J. B. Templeton, Secretary, 1020 So. Central avenue, Chicago 44; Lewis Thomas, Assistant Secretary, 59 East Van Buren street, Chicago 5.

Railway Tie Association—Roy M. Edmonds, Secretary-treasurer, 1221 Locust street, St. Louis 3, Mo.

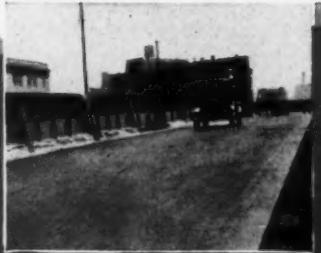
Roadmasters' and Maintenance of Way Association of America—Annual meeting, September 13-15, 1954, Conrad Hilton Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

Track Supply Association—Lewis Thomas, Secretary, 59 E. Van Buren street, Chicago 5.

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Association News (Cont'd)

present and comment on a color motion picture showing construction of the Quebec, North Shore & Labrador, a line being built in Canada to tap a rich iron ore deposit.

As of October 31, 1953, this newly formed club had a paid membership of 204 persons.

American Railway Engineering Association

At the time that this issue went to press it was known that several committees of the association planned to hold meetings during the month of December to give final approval to reports to be presented to the 1954 annual meeting, but no definite dates had been set.

The November Bulletin was mailed late last month to all members and contained reports of the committees on Buildings, Highways, Water, Oil and Sanitation Services, Yards and Terminals, Economics of Railway Location and Operation, Contract Forms, and Waterways and Harbors.

Maintenance of Way Club of Chicago

The program of the December meeting, to be held on the 14th at the usual

place—Welty's restaurant in the Field Building, Chicago—will consist of the showing of a color motion picture depicting tests conducted on the Atchison, Topeka & Santa Fe in an effort to find suitable means of fireproofing treated timber trestles. These tests included the burning of full-scale trestle models in determining the effectiveness of different types of protection. Additional commentary will be made by C. H. Sandberg, assistant bridge engineer, Santa Fe System, who has been in charge of the tests.

Mississippi Valley Maintenance of Way Club

The December meeting of the club will be held on the 14th at the DeSoto Hotel, St. Louis, starting with dinner at 6:30 p.m. The program will consist of a panel discussion of roadbed stabilization. The speakers will be R. H. Beeder, assistant chief engineer, Santa Fe System; J. E. Griffith, assistant chief engineer maintenance of way and structures, Central Lines of the Southern; and W. W. Hay, associate professor of railway civil engineering University of Illinois.

At the last meeting of the club held on November 9, P. E. Odom, secretary-treasurer, announced that the membership of the club as of the beginning of the meeting totaled 590, and that, in addition, 14 applications were on hand

which had not yet been acted upon by the Executive Committee. The attendance at this meeting was 205.

Supply Trade News

General

The St. Louis Railway Supply Company, St. Louis, Mo., has been appointed distributor for Baker-Raulang industrial trucks and cranes to railroads in the St. Louis area, representing the Baker-Raulang Company, Cleveland, Ohio.

Templeton, Kenly & Co. has moved into its new plant at Broadview, Ill., a suburb of Chicago. According to the company's president, J. B. Templeton, the move to larger, more efficient quarters was dictated by the development of new products, particularly hydraulic jacks and pullers.

Personal

John R. Hamill has been appointed manager of the Kansas City district office of the Worthington Corporation, succeeding Paul J. Foley who has been appointed general sales manager of the company's Plainfield (N. J.) Works' products.

Carl Gustafson has been appointed director of mechanical maintenance for the Colorado Fuel & Iron Corp. He will advise on mechanical problems arising in all of the company's 14 plants, and in addition will continue to be superintendent of the mechanical department at the Pueblo (Colo.) plant.

R. G. Thibaut has been appointed service manager of the Thew Shovel Company, Lorain, Ohio, succeeding R. P.

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R. G. Thibaut

Kelly, deceased. C. W. Raby, manager of field service, has been named assistant service manager.

(Continued on page 1194)

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Supply Trade News (Cont'd)

Mr. Thibaut joined the firm in 1936 as assistant service manager after having served abroad as a field service engineer in Thailand and other Far East countries. He will be responsible, in his new position, for the servicing of their equipment throughout the world.

Halbert H. Hall, assistant engineer on the Chicago & North Western, has resigned to accept the position of associate editor of *Railway Track and Structures* and *Railway Age*.

Mr. Hall was born at Chicago on May 5, 1901, and received his higher educa-

tion at Crane Junior College and the University of Illinois. He entered railway service on July 20, 1926, as an instrumentman on the North Western at Madison, Wis., later serving in that capacity and as a rodman at Malone, Iowa, and Lincoln, Neb. He left the North Western in 1927 to complete his education, returning in 1928 as an instrumentman, with headquarters at Winona, Minn. Mr. Hall served in this capacity at various points on the road until April 1944, when he was promoted to assistant general bridge inspector, system. Mr. Hall was promoted to division engineer on the Chicago, St. Paul, Minneapolis & Omaha (part of the North Western System) in



Roy D. King, manager of the railroad division of the *Magnus Chemical Company, Inc.*, Garwood, N. J., who was recently elected vice-president in charge of railroad sales and development.



Halbert H. Hall

1944 and was serving as assistant engineer at Chicago at the time of his resignation to join the editorial staff of this magazine.



Neil Pohl

Neil Pohl, industrial sales manager in the Tractor division of the Allis-Chalmers Manufacturing Company at Kansas City, Mo., has been promoted to the newly created position of motor grader sales manager in the industrial sales department of the division with headquarters at Milwaukee, Wis.

Mr. Pohl, a graduate of the University of Wisconsin, joined Allis-Chalmers in

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June 1948 with the civil engineering section of the industrial sales department. He was named industrial sales manager at Kansas City in May 1952, after having served in the same position at Winnipeg, Man., and as assistant industrial sales manager at Kansas City.

Obituary

John E. Hogan, vice-president and general manager of **Stanley H. Smith & Co.**, Cleveland, Ohio, died recently at the age of 45. Mr. Hogan had been associated with the firm for 21 years at the time of his death.

Trade Publications

(To obtain copies of any of the publications mentioned in these columns, use postcards, page 1183.)

Tractor Clutches—A new oil-type clutch along with 45 other operating details of the Caterpillar D7 tractor are described in a publication issued recently by the Caterpillar Tractor Company. Included in the folder, which is entitled, "Caterpillar Diesel D7 Tractor with the New Oil Clutch," is a detailed specification sheet and a detailed cut-away illustration of the tractor.

Welding Costs—"The Case of the Ailing Weldollar" is the title of a new booklet recently published by the Lincoln Electric Company. The 12-page, 2-color booklet points out that labor and overhead are responsible for 87.85 per cent of welding costs and also describes the firm's plan for reducing these costs by using higher welding currents, faster welding speeds and less machine downtime.

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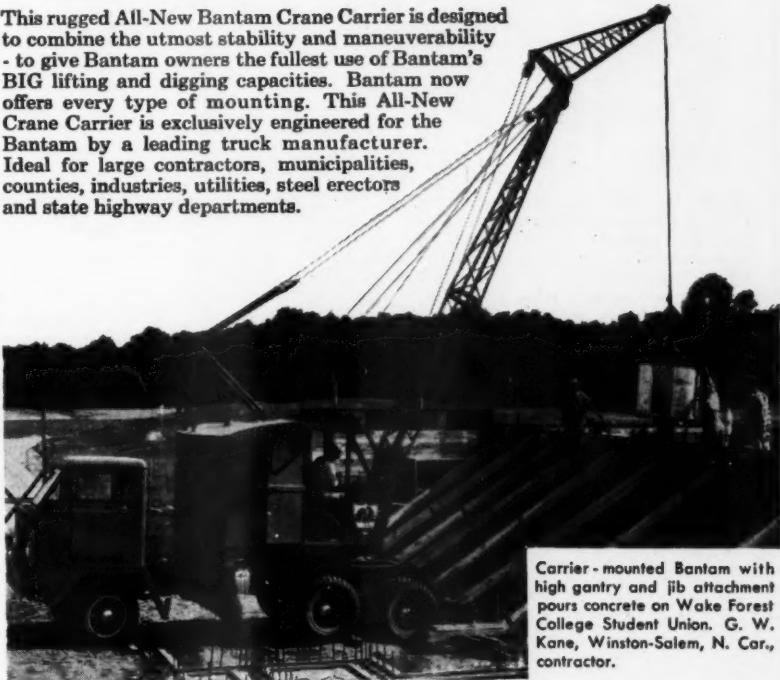
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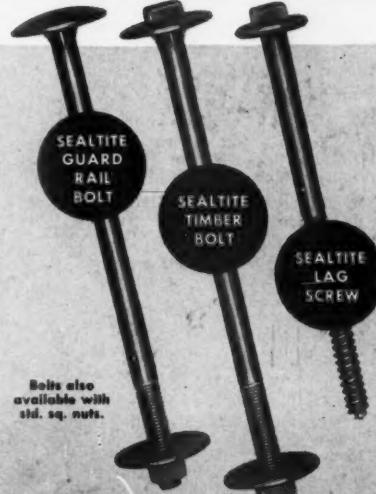
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